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Epidemiologic Overview

Memphis Transitional Grant Area Integrated HIV Prevention and Care Plan

REGION	South
PLAN TYPE	TGA, Integrated city/county-only prevention and care plan
JURISDICTIONS	Memphis-Shelby County, includes counties in Tennessee, Arkansas, and Mississippi
HIV PREVALENCE	Medium

The Memphis-Shelby County TGA's epidemiologic profile provides a robust description of the epidemic, including a demographic breakdown of PLWH for each county in the TGA for which they had data. While they were unable to obtain certain epidemiological data from some counties, they stated this limitation and the reason for it. The epidemiologic profile was selected as exemplary because it has a strong section on indicators of HIV risk among disproportionately impacted populations.

SELECTION CRITERIA: EPIDEMIOLOGIC OVERVIEW

Exemplary Epidemiologic Overview sections met the following criteria (based on the Integrated HIV Prevention and Care Plan Guidance):

- ☑ 5 year data trends used with most recent year between 2014 through 2016
- ☑ Use of clear and effective graphics
- ☑ Robust description of demographic data (race, age, sex, transmission category, gender identify) of persons newly diagnosed, PLWH, and persons at high risk for infection
- ☑ Description of SES (FPL, income, education, insurance status) of persons newly diagnosed, PLWH, and persons at high risk for infection
- ☑ Clear description of burden of HIV in service area
- ☑ Clear description of indicators of risk for HIV infection

Additional exemplary plan sections are available online:
www.targetHIV.org/exemplary-integrated-plans

B. Scope of the HIV/AIDS Epidemic in the Memphis TGA

B1. Introduction

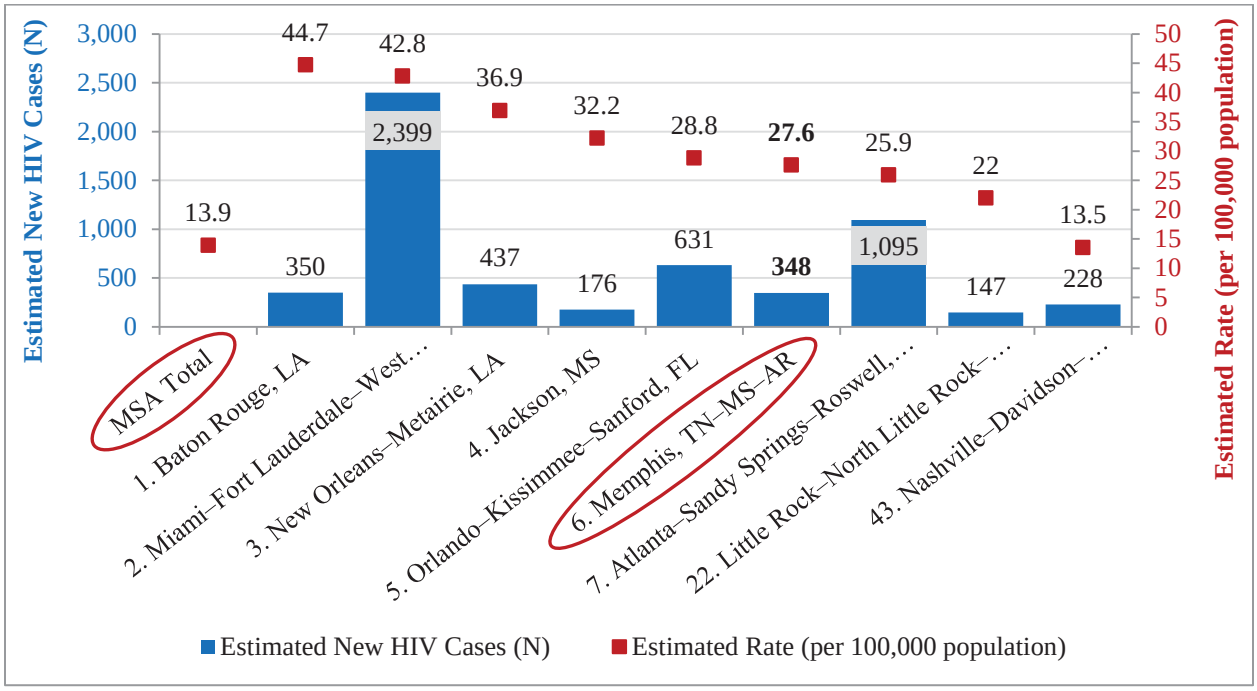
Health Resources Services Administration (HRSA) requires Ryan White programs to compile an epidemiological profile that describes HIV/AIDS incidence, prevalence, trends and population changes. The HIV/AIDS epidemic has affected people of all gender, age and racial/ethnic groups in the Memphis TGA. This effect, however, has not been the same for all groups. The Shelby County Health Department Epidemiology Section was consulted to collect data from several sources to create an overall Memphis TGA epidemiological profile presented.

All epidemiological data presented in this section were exported from the TN Enhanced HIV/AIDS Reporting System (eHARS) and Ryan White CAREWare System and requested from the Shelby County Health Department, the Tennessee Department of Health, the Mississippi Department of Health and the Arkansas Department of Health. Data were drawn from the U.S. Census[1], the 2012 Memphis TGA Ryan White HIV/AIDS Comprehensive Care Needs Assessment[2], the 2011 Ryan White Housing Needs Assessment[3], 2015 Ryan White Data Reports, locally published studies, and other sources as referenced.

Please note that due to the ongoing limitation of availability and reliability of data from the Mississippi and Arkansas Departments of Health, a number of the sections in this plan only relay information from the three West Tennessee counties (Shelby, Fayette and Tipton). While this information was requested multiple times from the Mississippi and Arkansas Departments of Health, it was not received in time to be included in the submission of this Plan.

While the number of new infections in the nation has remained relatively stable, newly diagnosed cases in the Memphis TGA have shown overall decline in the past five years (**Figure B-6**); however, the TGA incidence rate remains above the national figures. According to the Centers for Disease Control and Prevention (CDC) 2014 HIV Surveillance Report, the Memphis TGA ranked 6th in the nation for the rate of new HIV infections (**Figure B-1**) among the metropolitan statistical areas (MSAs) of residence in the United States in 2014[4].

Figure B-1: Rates and Ranks of New HIV Infection by Metropolitan Statistical Area, United States, 2014



Data Source: Centers for Disease Control and Prevention. HIV Surveillance Report, 2014; vol. 26.

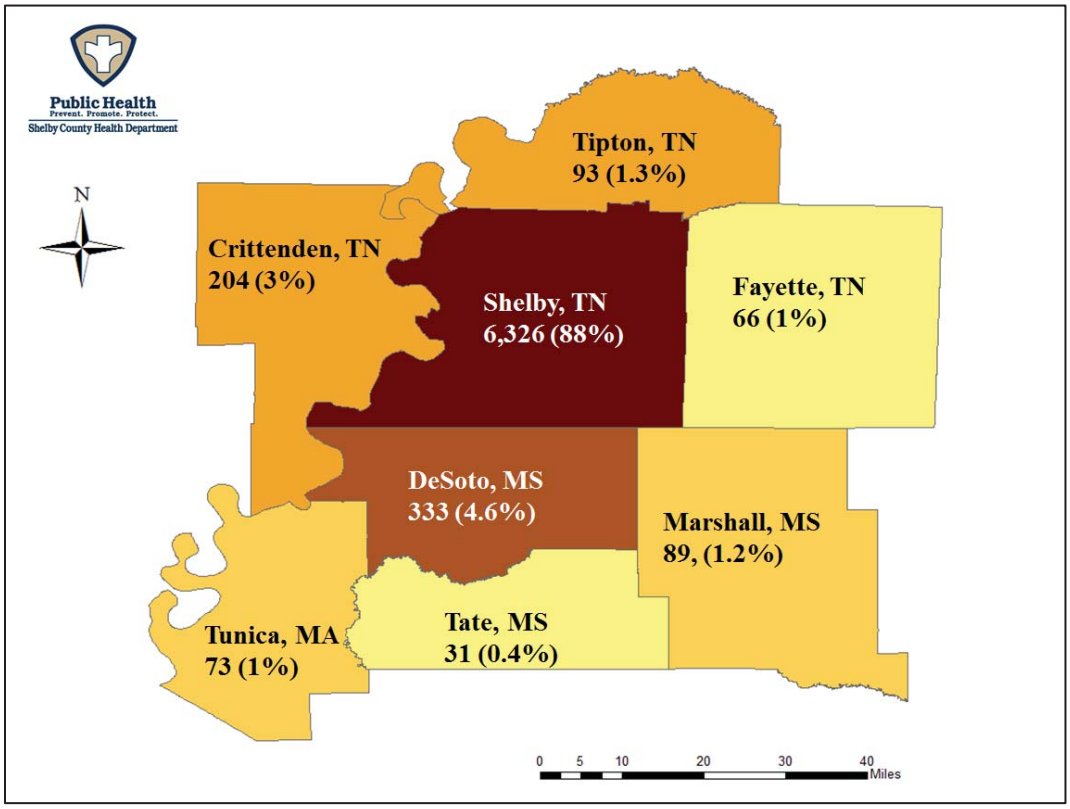
The estimated new HIV infection rate (27.6 per 100,000 population) in the Memphis MSA was more than two times higher than the estimated new HIV infection rate (13.9 per 100,000) population among all MSAs in the United States in 2014.

The estimated HIV and AIDS prevalence rate in the Memphis MSA respectively (543.5 and 250.3 per 100,000 population) were approximately two times greater than the estimated HIV prevalence rate and 1.5 times greater than the AIDS prevalence rate in the United States MSA (297.6 and 164.7 per 100,000 population) respectively in 2014[4].

B2. HIV and AIDS Prevalence (PLWHA) in the Memphis TGA as of 2015

As new HIV disease cases are being diagnosed each year and anti-retroviral treatment has become increasingly available, the prevalence of persons living with HIV/AIDS in the Memphis TGA continues to rise. As detailed in **Map B-1**, a total of 7,212 individuals were estimated to be living with HIV disease at the end of 2015. Shelby County accounts for the largest number of persons living with HIV/AIDS among the TGAs in Tennessee, and approximately 88% of all PLWHA in the Memphis TGA reside in Shelby County. DeSoto County in Mississippi accounts for the second largest PLWHA population (4.6%) followed by Crittenden County, Arkansas (2.8%).

Map B-1: People Living With HIV/AIDS by Counties in the Memphis TGA, 2015

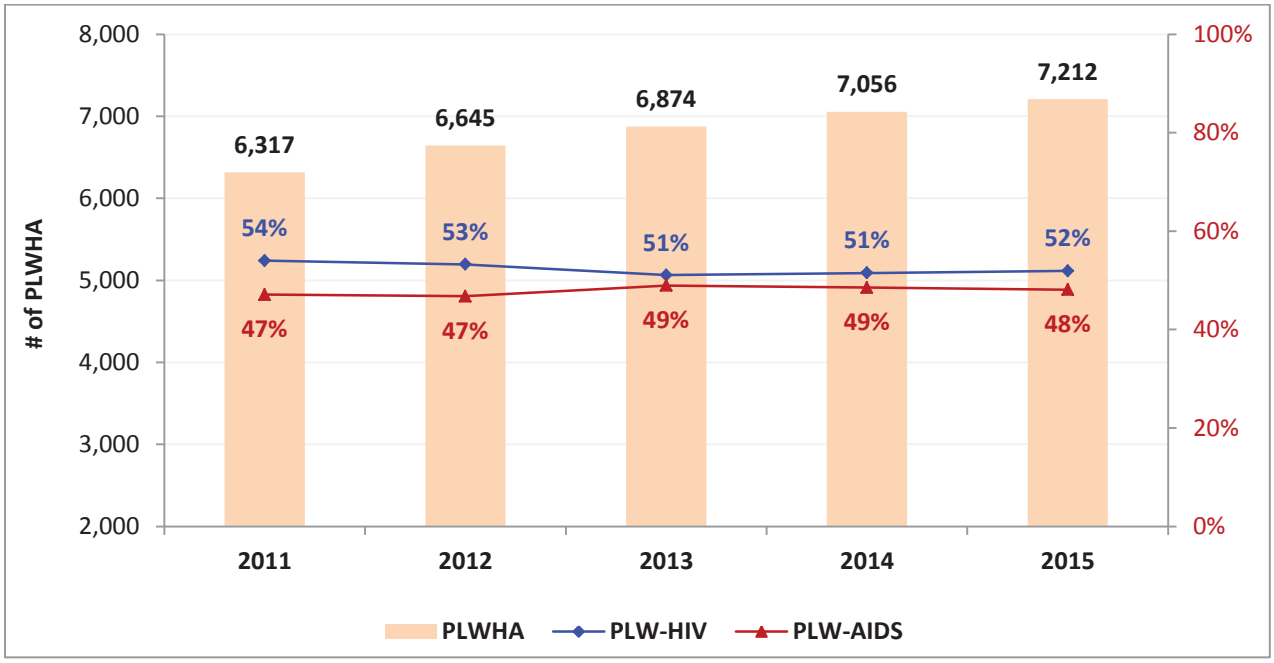


Source: Shelby County Health Department, Epidemiology Section (2) Mississippi Department of Health, STD/HIV Office (3) Arkansas Department of Health, HIV/AIDS Registry Section.

Of the 7,212 individuals estimated to be living with HIV disease at the end of 2015, 48% (n=3,565) of these individuals were classified as AIDS (**Figure B-2**).

- The overall percentage of persons living with HIV infection stage 3 (AIDS) has gradually increased from 47% in 2011 to 49% in 2013 then decreased to 48%. This is due to the effective care, treatment, and lower number of deaths among the PLWHA than new HIV cases each year.
- The overall percentages of people living with HIV not AIDS steadily decreased from 54% in 2011 to 52% in 2015. This decrease is partly due to overall decreasing of HIV incidence in Memphis TGA; 399 new cases in 2011 to 314 new case in 2015 **(Table B-7).**

Figure B-2: Trends of Persons Living with HIV/AIDS in the Memphis TGA, 2011– 2015



*Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR; *: Preliminary data subject to change*

Almost 68% of people living with HIV or AIDS in the Memphis TGA are male. The majority is Non-Hispanic Black (82%), followed by Non-Hispanic White (13%) and 2% Hispanic/Latino. Almost 48% of persons living with HIV or AIDS were 45 years of age and older at the end of 2014. Fifty two percent (52%) of all females living with HIV or AIDS are within the child-bearing range of 13 to 44 years of age (**Table B-1**).

Forty two percent (42%) of all PLWHA account their risk exposure to Men who have Sex with Men (MSM) contact, 32% to heterosexual contact, 19% have an unidentified risk transmission exposure, 3% to intravenous drug use (IDU), 2% MSM/IDU, and 2% through blood transfusion and perinatal exposure. A higher percentage of females living with HIV or AIDS are non-Hispanic Black (87%) compared to males (80%). The vast majority of HIV-infected women have heterosexual risk (70%), IDU (4%) and 23% have an unidentified risk exposure.

Among males, 61% of the cases are attributed to the risk category MSM, followed by heterosexual risk (15%), MSM/IDU (2%), IDU (3%), and 18% have an unidentified exposure. Cases associated with the No Identified Risk (NIR)/Other risk category could indicate two things: that these were newer cases which have not yet had a full surveillance investigation, or that these were older cases that are lost to follow-up with no risk established. However, the CDC believes that unidentified risk among women may be assigned because no sexual partners who were known to be HIV-infected or high-risk for HIV could be identified. For males, it is also likely that some percent of those individuals with unidentified risk do not report MSM contact due to stigma.

Table B-1: Prevalence of HIV or AIDS, Demographic Characteristics by Sex, Memphis TGA, as of 2015

Demographic Groups/ Characteristics	Male		Female		Total	
	N	%	N	%	N	%
Total	4,918	68%	2,294	32%	7,212	100%
Race/Ethnicity						
White, not Hispanic	722	15%	185	8%	907	13%
Black, not Hispanic	3,925	80%	2,001	**87%**	5,926	82%
Hispanic	132	3%	44	2%	176	2%
Other Race, not Hispanic	139	3%	64	3%	203	3%
Current Age Group as of 2015 (years)						
0 - 14 years	19	0%	36	2%	55	1%
15 - 19 years	43	1%	30	1%	73	1%
20 - 24 years	296	6%	70	3%	366	5%
25 - 34 years	1,079	22%	422	18%	1,501	21%
35 - 44 years	1,078	22%	692	30%	1,770	25%
45 - 54 years	1,402	29%	627	27%	2,029	28%
55+ years	1,001	20%	417	18%	1,418	20%
Exposure Category						
MSM	3,016	61%	0	0%	3,016	42%
Heterosexuals	735	15%	1,600	70%	2,335	32%
Injection drug users	129	3%	103	4%	232	3%
MSM & IDU	111	2%	0	0%	111	2%
Other/hemophilia/blood transfusion	60	1%	71	3%	131	2%
Risk not reported or identified	867	18%	520	23%	1,387	19%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

B3. Persons Living With HIV/AIDS in Shelby County, Tennessee

Eighty eight percent (80%) of all persons living with HIV or AIDS in the Memphis TGA reside within Shelby County **(Map B-1)**. As such, demographic frequencies are similar to those previously discussed in the TGA demographic section of persons living with HIV/AIDS. The majority of the PLWHA population in Shelby County was males (68%). Among males, 81% are Non-Hispanic Black, 50% are above age 45, and 61% reported MSM contact as a risk exposure. Among females, 89% are Non-Hispanic Black, 52% are between the child-bearing ages of 15-44 years, and 71% reported heterosexual contact as a risk exposure. The percentage of undetermined risk exposure among all males and females living in Shelby County is 19% at the end of 2015.

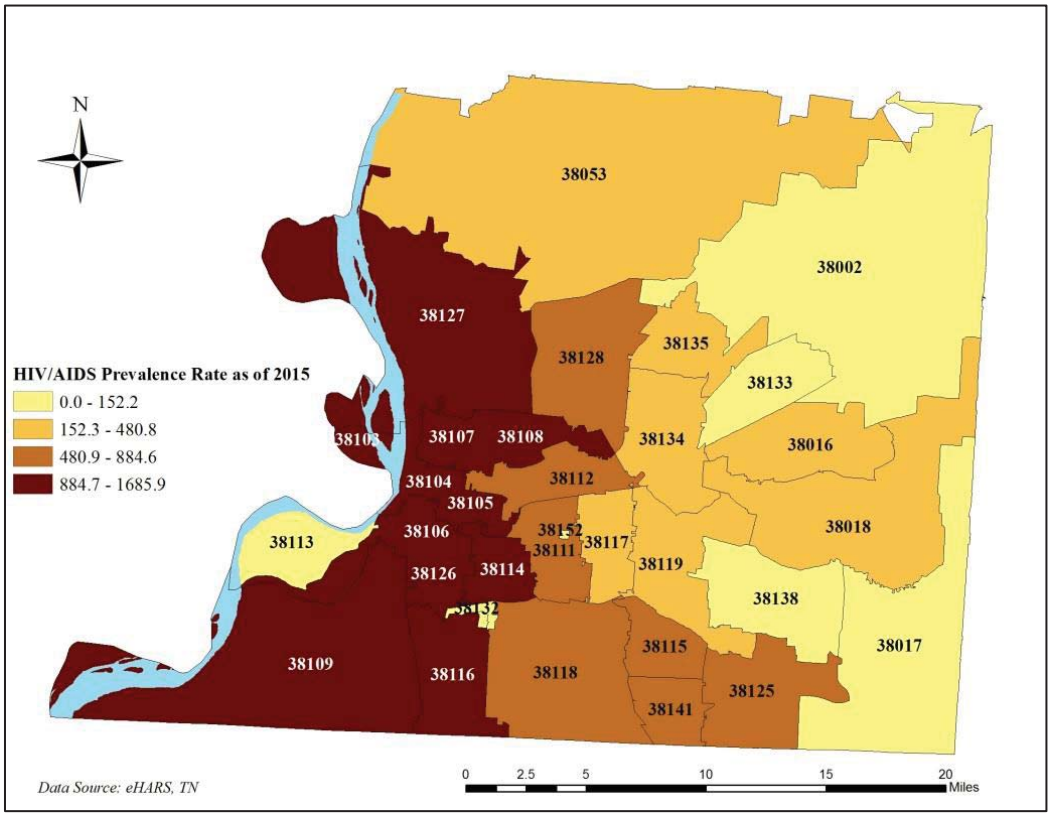
Table B-2: Persons Living with HIV/AIDS by Geographic Residence and Demographics/Risk Exposure Category, Shelby County, 2015

	Male		Female		Total	
	N	%	N	%	N	%
Total	4,321	68%	2,005	32%	**6,326**	100%
Race/Ethnicity						
White, Not Hispanic	577	13%	121	6%	698	11%
Black, Not Hispanic	3,504	81%	1,787	**89%**	5,291	84%
Hispanic, All Races	118	3%	39	2%	157	2%
Other, Not Hispanic	122	3%	58	3%	180	3%
Current Age Group as of 2015						
0 to 14	18	0%	33	2%	51	1%
15 to 19	34	1%	19	1%	53	1%
20 to 24	243	6%	57	3%	300	5%
25 to 34	940	22%	347	17%	1,287	20%
35 to 44	933	22%	623	31%	1,556	25%
45 to 54	1,242	29%	547	27%	1,789	28%
55+	911	21%	379	19%	1,290	20%
Risk/Exposure						
Male Sex with Male	2,638	**61%**	NA	NA	2,638	42%
Heterosexual Contact	675	16%	1,433	**71%**	2,108	33%
MSM/IDU	87	2%	NA	NA	87	1%
IDU	110	3%	78	4%	188	3%
Perinatal Exposure	38	1%	60	3%	98	2%
Hemophilia/blood transfusion	16	0%	6	0%	22	0%
Not Identified	757	18%	428	21%	1,185	19%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN.

Map B-3 displays the majority of persons living with diagnosed HIV infection are concentrated in north west and south west part of Shelby County where Memphis city area limits; zip codes within the North Memphis, Whitehaven, Westwood and the downtown areas report the highest burden with rates of (885-1685 per 100,000 persons). The rates of persons living with diagnosed HIV infection in these zip code areas are 3-5 times higher than that of MSAs total (293 per 100,000 persons) in the nation.

Map B-3: Rates (per 100,000 persons) of PLWHA in Shelby County, Tennessee, as of 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

B4. Persons Living with HIV/AIDS in Fayette and Tipton Counties, Tennessee

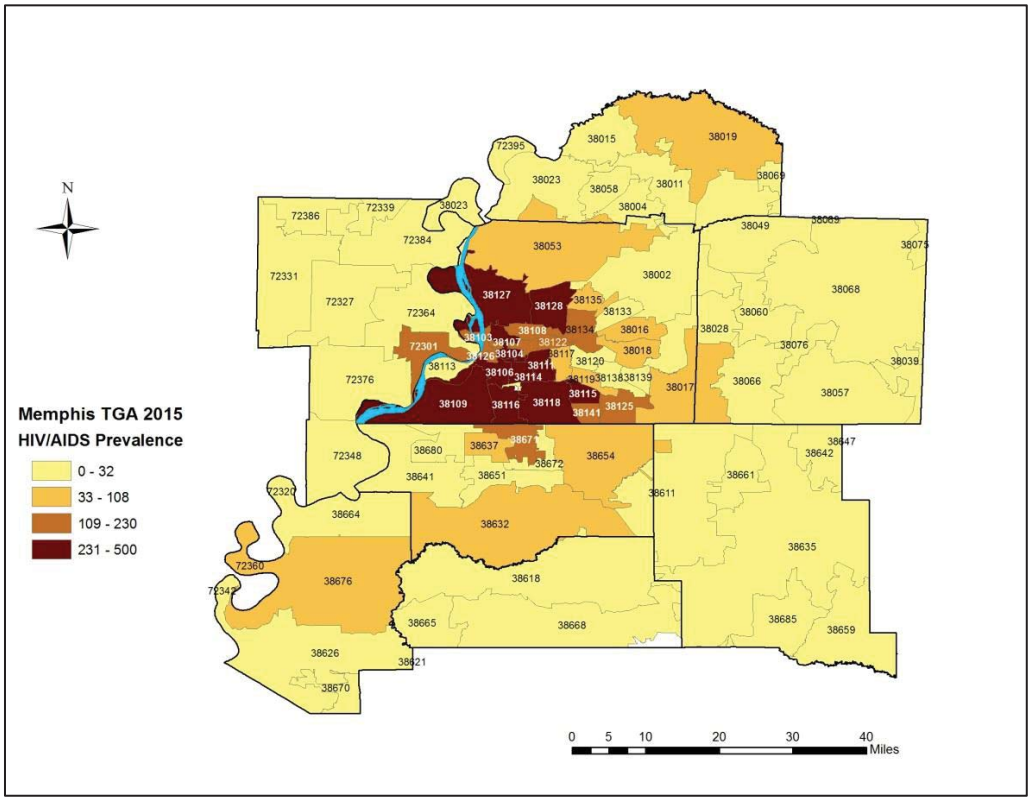
At the end of 2015, 159 individuals were reported to be currently living with HIV or AIDS in Fayette and Tipton Counties, which comprises 2% of PLWHA in Memphis TGA **(Table B-3)**. Approximately 70% of these individuals were male. Additionally, 32% of all persons living with HIV or AIDS in Fayette and Tipton counties were Non-Hispanic White and 62% were Non-Hispanic Black, which also differs from the proportion of PLWH in Memphis TGA (13% and 82%, respectively). Reported risk exposure is similar to the overall TGA distribution: 42% reported MSM contact, 31% heterosexual contact and 15% had undetermined risk. The number of persons living with HIV/AIDS in Fayette and Tipton were spread across all age groups: 20-24 years (5%), 25-34 years (18%), 35-44 years (24%), 45-54 years (29%), and 55+ years (21%).

B5. Persons Living with HIV/AIDS in Northern Mississippi

Approximately 7% (n=523) of all persons living with HIV/AIDS in the Memphis TGA were residing in the four Northern Mississippi counties at the end of 2015 **(Table B-3)**. The majority reside within DeSoto County (n=333), followed by Marshall County (n=89), Tunica County (n=73) and Tate County (n=31) **(Map B-1)**. The zip code, 38671, in DeSoto County has the highest concentration of PLWHA (109 – 230 cases) among those four counties in Mississippi. **(Map B-2)**. Approximately 69% of the Northern Mississippi PLWHA population was male, and 31% were female, which mirrors the overall TGA PLWHA

population distribution **(Table B-2)**. The majority are Non-Hispanic Black (70%) followed by Non-Hispanic White (25%), and 2% are Hispanic. As similarly reported in the Memphis TGA, 46% attribute MSM contact as a risk exposure, 4% attribute IDU, and 3% both MSM and IDU. A smaller percentage of heterosexual contact is reported (19%) as compared to the Memphis TGA, but this is likely due to a larger number of cases that have undetermined risk (28%). The number of persons living with HIV/AIDS in Northern Mississippi is spread across all age groups: 20-24 years (6%), 25-34 years (21%), 35-44 years (24%), 45-54 years (31%), and 55+ years (17%).

Map B-2: Persons Living with HIV/AIDS by Zip Code, Memphis TGA, 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

B6. Persons Living with HIV/AIDS in Crittenden County, Arkansas

At the end of 2015, 204 individuals were reported to be living with HIV or AIDS in Crittenden County, Arkansas, which accounts for approximately 3% of the entire Memphis TGA PLWHA population **(Map B-1)**. Crittenden County has the largest percentage of females living with HIV disease in the Memphis TGA; 38% of all PLHWA were female and 62% were male **(Table B-3)**. Approximately 83% were non-Hispanic Black and 13% are non-Hispanic White. The highest percentage of heterosexual contact (39%) and IDU (11%) is reported in Crittenden County, while MSM contact (35%) and undetermined risk (14%) are the lowest in the Memphis TGA. The number of persons living with HIV/AIDS in Crittenden County is spread across all age groups: 20-24 years (13%), 25-34 years (36%), 35-44 years (24%), 45-54 years (16%), and 55+ years (3%). **Map B-2** shows that the highest number of PLWHA is concentrated on the zip code area 72301, which is the border area of the West Memphis.

Table B-3: Persons Living with HIV/AIDS by Geographic Residence and Demographics/Risk Exposure Category, Memphis TGA, 2015

Demographic Groups/ Characteristics	North MS 4 Co.		Crittenden, AR*		Fayette & Tipton		Shelby		TGA Total	
	N	%	N	%	N	%	N	%	N	%
Total	**523**	**7%**	**204**	**3%**	**159**	**2%**	**6,326**	**88%**	**7,212**	**100%**
Gender/Sex										
Male	359	69%	127	62%	111	70%	4,321	68%	4,918	68%
Female	164	31%	77	38%	48	30%	2,005	32%	2,294	32%
Race/Ethnicity										
White, Not Hispanic	131	25%	27	13%	51	32%	698	11%	907	13%
Black, Not Hispanic	367	70%	170	83%	98	62%	5,291	84%	5,926	82%
Hispanic, All Races	10	2%	7	3%	2	1%	157	2%	176	2%
Other, Not Hispanic	15	3%	0	0%	8	5%	180	3%	203	3%
Current Age Group as of 2015 (years)										
0 to 14	0	0%	0	0%	4	3%	51	1%	55	1%
15 to 19	4	1%	16	8%	0	0%	53	1%	73	1%
20 to 24	31	6%	27	13%	8	5%	300	5%	366	5%
25 to 34	112	21%	73	36%	29	18%	1,287	20%	1,501	21%
35 to 44	127	24%	49	24%	38	24%	1,556	25%	1,770	25%
45 to 54	162	31%	32	16%	46	29%	1,789	28%	2,029	28%
55+	87	17%	7	3%	34	21%	1,290	20%	1,418	20%
Risk/Exposure										
Male Sex with Male	239	46%	72	35%	67	42%	2,638	42%	3,016	42%
Heterosexual Contact	99	19%	79	39%	49	31%	2,108	33%	2,335	32%
IDU	19	4%	19	9%	6	4%	188	3%	232	3%
MSM/IDU	14	3%	5	2%	5	3%	87	1%	111	2%
Hemophilia/blood transfusion/Other	3	1%	0	0%	8	5%	120	2%	131	2%
No Identified	149	28%	29	14%	24	15%	1,185	19%	1,387	19%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

B7. AIDS Prevalence

As of 2015, 69% of people living with AIDS (stage-3 HIV infections) in the Memphis TGA were male. The majority was Non-Hispanic Blacks (77%), followed by Non-Hispanic Whites (12%) and 3% Hispanic/Latino (**Table B-4**).

Forty two percent (42%) of all persons living with AIDS account their risk exposure to MSM contact, 31% to heterosexual contact, and 20% have an unidentified risk transmission exposure. A higher percentage of females living with AIDS are Non-Hispanic Black (87%) compared to Non-Hispanic Black males (77%). The vast majority of HIV-infected women have heterosexual risk (70%), IDU (6%) and 20% have an unidentified risk exposure. Among males, 63% of the cases are attributed to MSM, followed by heterosexual risk (15%), MSM/IDU (3%), IDU (3%), and 15% have an unidentified exposure.

Table B-4: Prevalence of AIDS, Demographic Characteristics by Sex, Memphis TGA, as of 2015

	Male (69%)		Female (31%)		Total	
	N	%	N	%	N	%
Total	2,388	70%	1,045	30%	3,433	100%
Race/Ethnicity						
White, not Hispanic	365	15%	66	6%	431	13%
Black, not Hispanic	1,853	78%	922	88%	2,775	**81%**
Hispanic	73	3%	20	2%	93	3%
Other Race	97	4%	37	4%	134	4%
Current Age (as of 2015)						
0 - 14 years	2	0%	3	0%	5	0%
15 - 19 years	10	0%	9	1%	19	1%
20 - 24 years	93	4%	34	3%	127	4%
25 - 34 years	349	15%	154	15%	503	15%
35 - 44 years	531	22%	327	31%	858	25%
45 - 54 years	805	34%	315	30%	1,120	33%
55+ years	598	25%	203	19%	801	23%
Risk/Exposure Category						
Men who have sex with men	1,486	**62%**	NA	NA	1,486	43%
Heterosexuals	371	16%	750	72%	1,121	33%
Injection drug users (IDU)	74	3%	65	6%	139	4%
MSM&IDU	73	3%	NA	NA	73	2%
hemophilia/blood transfusion	26	1%	20	2%	46	1%
Risk not identified	358	15%	210	20%	568	17%

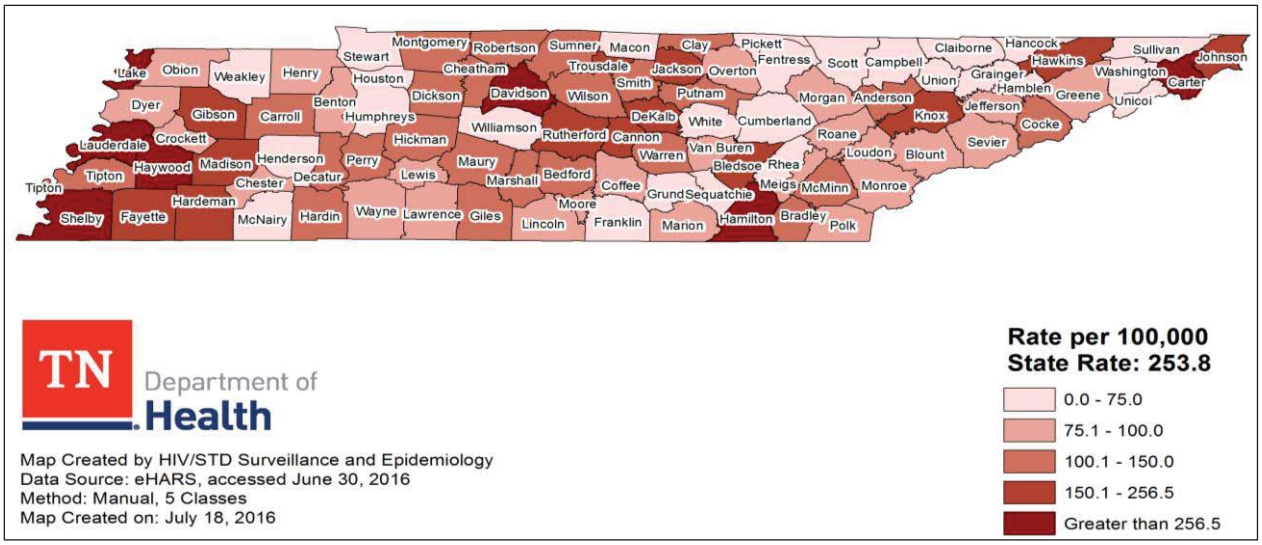
Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

Snapshot of Tennessee Prevalence Data:

- Of the 16,754 persons living with HIV at the end of 2015 in the State of Tennessee, 73.6 % were male.
- The rate of those living with HIV disease was 3.0 times as high among males compared to females.
- Blacks/African Americans represented the largest proportion of living HIV disease cases (56.6%) and had a rate that was 7.1 times as high as the rate among whites.
- Among males, the rate of living cases among blacks/African Americans was 6.0 times as high as among whites.
- Among females, the rate of living cases among blacks/African Americans was 13.5 times as high as among whites.
- Blacks/African Americans represent the largest proportion of transgender persons living with HIV disease (63.8%).
- The greatest proportion of living HIV disease cases were persons 45-54 years of age (32.4%)

Source: TDOH 2015 HIV Epidemiological Profile

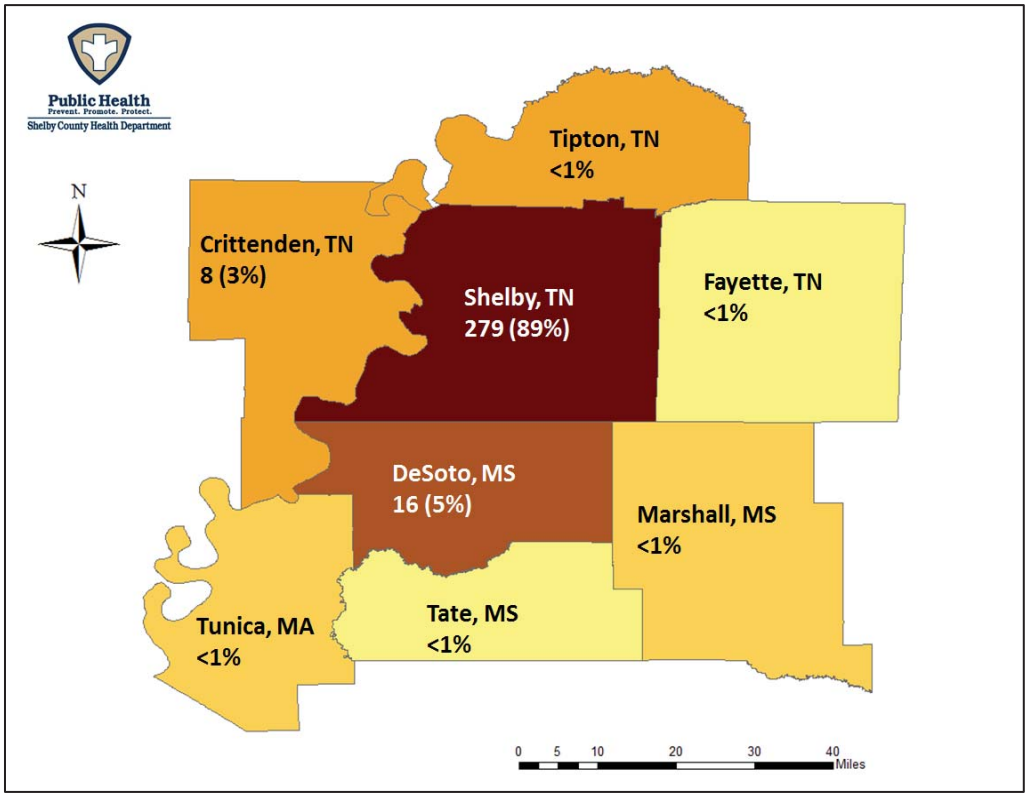
Map B-3 Prevalence Rates in Tennessee for 2015



B8. HIV Disease Incidence in the Memphis TGA

Incidence is a term commonly used in epidemiology to refer to newly diagnosed cases. Incidence may be defined over a period of time that the new cases were diagnosed. For the purposes of this report, incidence reflects cases diagnosed 2011 throughout 2015, and newly diagnosed AIDS (Stage-3 HIV infection) cases include both previously diagnosed HIV cases that have progressed to AIDS as well as newly identified AIDS cases that have not been previously identified as HIV positive.

Map B-4: HIV Disease Incidence in the Memphis TGA by County, 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR

In 2015, there were 314 newly diagnosed HIV disease cases in the Memphis TGA. Among all newly diagnosed HIV cases, 89% (n=278) were diagnosed among Shelby County residents, while 5% were among DeSoto County residents, 3% among Crittenden County residents, and less than five cases were reported in each of the remaining West Tennessee and Northern Mississippi counties (**Map B-4)**.

Overall, the estimated numbers of new HIV infections have been decreasing from 425 in 2012 to 314 in 2015 in the Memphis TGA. The new HIV diagnosis (n=314) represents a 21% decrease in 2015 compared to the new HIV cases (n=399) in 2011 **(Table B-4)**. The number of new HIV disease cases diagnosed among DeSoto, Crittenden, and Fayette county residents have remained relatively stable over the past three years.

Table B-4: Newly Diagnosed HIV Disease Cases by County, Memphis TGA, 2011-2015

	2011	2012	2013	2014	2015*
Memphis TGA	**399**	**425**	**344**	**339**	**314***
Shelby, TN	352	383	299	288	279
DeSoto, MS	17	20	17	23	16
Crittenden, AR	8	5	9	8	8*
Fayette, TN	7	13	7	10	<5*

*Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, A. *: Preliminary data subject to change*
***: Tipton County, TN and Marshall, Tate, and Tunica Counties, MS routinely report less than five cases and are not listed but are included in the overall Memphis TGA total. Case counts of less than five have been suppressed for statistical reliability and confidentiality guidelines. Additional cells greater than five may be suppressed to prohibit back-calculation. Data is considered provisional and subject to change.*

Table B-5 shows the characteristics of persons diagnosed with HIV between 2011 and 2015. The majority were male, Non-Hispanic Blacks, age 15-34 years and MSM. Race/ethnicity distributions were fairly similar year to year from 2011 to 2015, but data for recent years suggest small increases in proportions of Non-Hispanic Blacks. The proportion of new diagnoses among persons aged 45-54 years decreased by 7%. However, the new HIV diagnosis among adolescents and the young adults age 15-34 were increased from 49% in 2011 to 63% in 2015. The majority of new cases (50%) were infected through male sex with male (MSM) exposure in 2014. Proportions of diagnoses among heterosexual contact, the second largest transmission category, remained relatively stable with 38% since 2011. Unidentified risk/exposure decreased from 16% in 2011 to 11% in 2014. This is due to the improvement of documentation of the risk exposure among the new HIV infections. However, the preliminary data in 2015 shows increased proportion of unidentified risk (28%).

Table B-5: Proportions of new HIV Cases by demographic characteristics, Memphis TGA, 2011-2015

	Year of Initial HIV Diagnosis				
	2011	**2012**	**2013**	**2014**	**2015**
Total	**399**	**425**	**344**	**3,39**	**314***
Gender					
Male	69%	70%	74%	74%	79%
Female	29%	28%	23%	26%	21%
Race/Ethnicity					
White, not Hispanic	9%	13%	10%	12%	10%
Black, not Hispanic	80%	78%	78%	81%	86%
Hispanic	3%	3%	3%	3%	4%
Other Race/ Not Specified	6%	5%	6%	4%	0%
Age at Diagnosis (Years)					
0 - 14 years	1%	<1%	<1%	1%	<1%
15 - 19 years	7%	8%	6%	9%	5%
20 - 24 years	21%	22%	25%	24%	26%
25 - 34 years	21%	27%	28%	27%	32%
35 - 44 years	21%	16%	15%	18%	16%
45 - 54 years	20%	14%	16%	13%	13%
55+ years	7%	12%	8%	9%	8%
Exposure Category					

Men who have sex with men (MSM)	42%	44%	54%	50%	43%
Heterosexuals	38%	36%	29%	38%	25%
Injection drug users (IDU)	<1%	<1%	1%	<1%	0%
MSM & IDU	<1%	0%	<1%	0%	3%
Hemophilia/blood transfusion/Perinatal Exposure	1%	<1%	<1%	1%	<1%
Risk not identified	16%	18%	13%	11%	28%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

The overall rate in HIV disease incidence decreased between 2011 and 2015 (30.04 to 23.64 per 100,000 persons) in the Memphis TGA. In comparing five years of trend data, a 21% decrease of HIV disease rate was observed between 2011 and 2015 (**Table B-6**). This decrease occurred among both males and females; however, females reported larger reductions in HIV disease incidence than males. New HIV diagnoses rates among Hispanics/Latinos showed a decrease by 17% and 16% among Non-Hispanic Blacks and Non–Hispanic Whites respectively. **Table B-6** shows that the rate of new infection (19.1) among the Hispanics was almost four times of the new infection rate among the Non-Hispanic Whites. The largest reductions in incidence were observed among persons aged 0-14 years (-60%), 15-19 years (-46%), and 45-54 years (-49%). While an overall percent increase by 21% in incidence rates was observed in youth and adolescents aged 25-34 years during 2011-2015. This trend shows that new HIV infections shifted from the adult age group (35-54 years) to young adults aged 25-34 years old in the Memphis TGA.

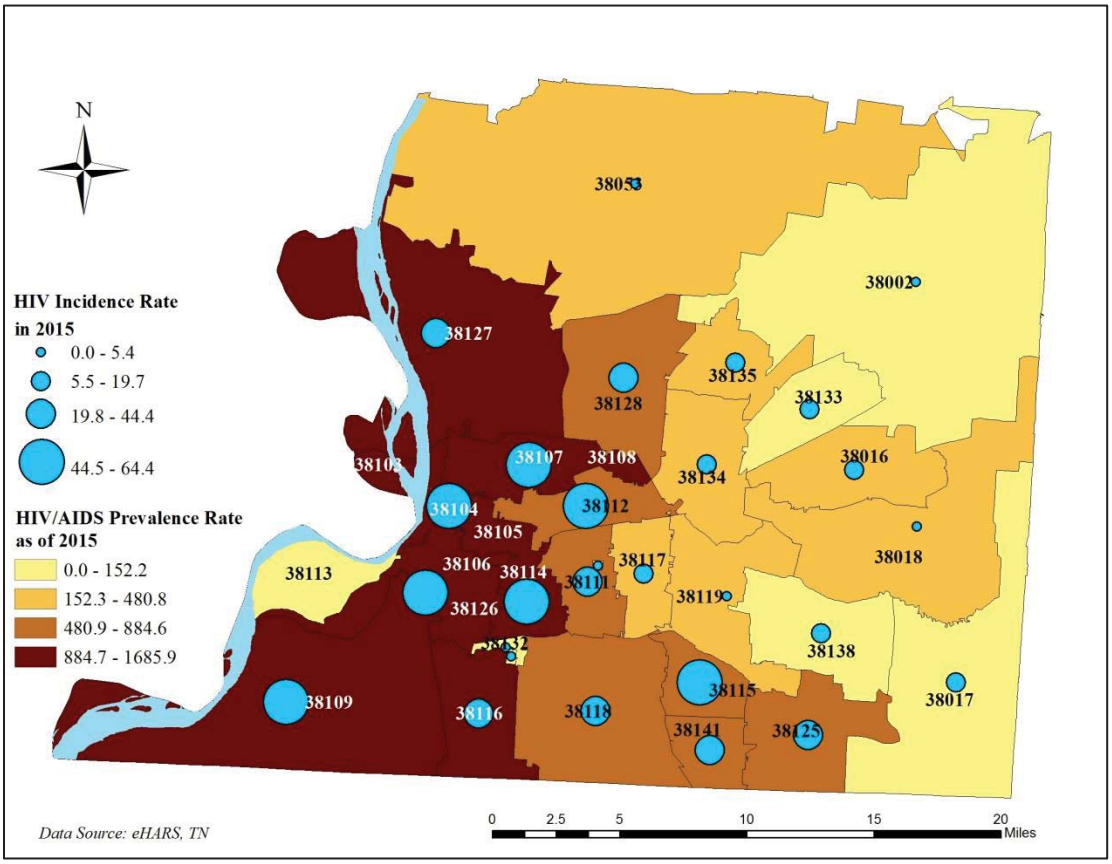
Table B-6: New HIV Disease Case Rates by Demographics, Memphis TGA, 2011-2015

	2011		2012		2013		2014		2015*		2011-2015
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	% Change
Total	**399**	**30.0**	**425**	**32.0**	**344**	**25.9**	**339**	**25.5**	**314**	**23.6**	**-21%**
Gender											
Male	277	43.5	299	46.9	255	40.0	251	39.4	247	38.7	-11%
Female	114	16.5	121	17.5	80	11.6	88	12.7	67	9.7	**-41%**
Race/Ethnicity											
White, not Hispanic	36	6.0	56	9.3	34	5.6	42	7.0	30	5.0	-17%
Black, not Hispanic	321	52.7	331	54.4	269	44.2	273	44.8	270	44.3	-16%
Hispanic	11	16.2	13	19.1	10	14.7	11	16.2	13	19.1	18%
Other Race	23	47.4	20	41.3	22	45.4	13	26.8	1	2.1	-96%
Age at Diagnosis (Years)											
0 - 14	5	1.8	1	0.4	1	0.4	4	1.4	2	0.7	**-60%**
15 - 19	28	29.0	34	35.2	20	20.7	29	30.0	15	15.5	-46%
20 - 24	83	87.8	93	98.4	87	92.1	81	85.7	81	85.7	-2%
25 - 34	84	46.2	115	63.2	97	53.3	91	50.0	102	56.1	**21%**
35 - 44	83	47.1	66	37.5	50	28.4	61	34.6	49	27.8	-41%
45 - 54	80	43.3	59	32.0	54	29.2	43	23.3	41	22.2	-49%
55+	28	9.1	52	16.8	26	8.4	30	9.7	24	7.8	-14%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR; 2010-2014 ACS Survey 5-Year;

**preliminary data, subject to change*

Map B-4: Rates (per100,000 population) of HIV/AIDS Prevalence and Incidence, Shelby County, 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN.

Rates of new HIV cases and rates of persons living with diagnosed HIV infection was shown by zip code in Shelby County in 2014 **(Map B-4)**. The darkest shaded area represents the highest rates of PLWHA, and the largest blue circle shows the highest rates of HIV infection. In the map, the darkest shaded area has largest blue circle. The positive correlation between the rates of HIV/AIDS prevalence and the rates of HIV incidences clearly indicates that these zip code areas should be highly prioritized in terms of resource allocation for HIV testing, care and treatments.

As outlined in **Map B-3**, among the eight counties in the Memphis TGA, the highest burden of new HIV cases (90%) were on the three counties (Shelby, Fayette, and Tipton) in the West Tennessee. Thirty years of HIV data of these three counties in the West Tennessee are well documented in Enhanced HIV/AIDS Reporting System (eHARS) and are readily available. **Figure B-3** shows the three year rolling average of HIV, AIDS, and Death incidence in the west Tennessee three counties between 1985 and 2015. As shown in **Figure B-4**, HIV disease epidemic in the West Tennessee can be described by three sequential phases.

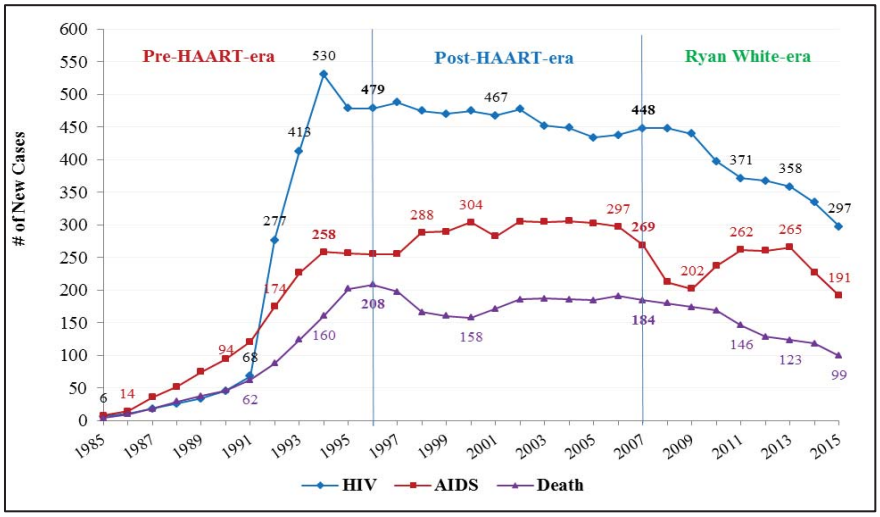
The first phase is also called pre-HAART-era, which is before the advent of HAART (highly active antiretroviral therapy) in 1996. During the first fifteen years of the HIV/AIDS pandemic in the pre-HAART

era (1981-1996), new HIV cases sharply increased and reached its peak from six cases in 1985 to 530 cases in 1994. Newly diagnosed AIDS cases and Death cases among HIV infected individuals also reached 255 and 208 cases, respectively in 1996. The second phase of the HIV disease epidemic started with introduction of the highly active antiretroviral therapy (HAART) in 1996. The second phase lasted for 10 years until the approval of Ryan White Part A funding by Health Resources and Services Administration (HRSA). This phase also called the Post-HAART-era.

During the second phase of HIV epidemic (1996 – 2007), despite the availability of antiretroviral drugs to limit the epidemic and prolong the lives of those infected, the number of newly infected individuals continued to rise alarmingly. In the West Tennessee three counties, the incidence of HIV slightly decreased and remained fairly static at approximately 462 new cases. Newly diagnosed AIDS cases showed a slight increase and remained approximately 288 cases. Deaths remained a relatively static average at 180 cases each year.

The third phase of the HIV epidemic, as the Ryan White-era began in 2007 onwards with the approval of Part A funding for Shelby County, Tennessee. Then followed the legislation called the Ryan White HIV/AIDS Treatment Extension Act of 2009 (Public Law 111-87, October 30, 2009)[5]. During the Ryan White-era, the HIV disease epidemic has been more limited and better controlled with the assistance of our Ryan White HIV/AIDS program by providing primary medical care and essential support services to those who do not have sufficient financial resources to cope with the disease in West Tennessee. New HIV cases and deaths decreased approximately more than 150 cases and 85 cases respectively between 2007 and 2015. However, newly identified AIDS cases decreased to 202 cases in 2009 and gradually increased to 265 cases in 2013. This increase is partly due to increasing awareness of the persons living with HV who did not know their HIV status. These achievements of limiting and controlling the HIV epidemic in the West Tennessee notably underscore the success of the Memphis HIV/AIDS program.

Figure B-3: New HIV, AIDS, and Death Cases, Three Years Rolling Average, West TN 3 Counties, 1985 – 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN.

Table B-7: 2015 Demographics of PLWH

Gender	TN	Memphis TGA	Nashville TGA
Male	12,334	4,918	4,064
Female	4,362	2,294	1,154
Race/Ethnicity			
Black/African American	9,476	5,926	2,475
White	6,109	907	2,269
Hispanic	758	176	324
Asian	70		
Other	341	203	123
Age			
<15	94	55	30
15-24	733	439	219
25-34	2,824	1,501	804
35-44	3,780	1,770	1,194
45-54	5,427	2,029	1,802
55-64	3,043	1,418	923
65+	853		246
Transmission Category			
Heterosexual		2,335	945
IDU		232	511
MSM		3,016	2,759
MSM/IDU		111	188
Perinatal		131	36
Other/Unknown Risk		1,387	779
Socio Economic s			
FPL			
Below 100%	66.40%		
100-138%	11.40%		
139-200%	9.70%		
201-250%	5.20%		
251-400%	6.30%		
401-500%	0.30%		
> 500%	0.70%		
Health Insurance Status			
Private-Employer	14.80%		
Private-Individual	3.60%		
Medicare	15.50%		
TennCare	16.80%		
VA	0.80%		
Indian Health	0.10%		
No insurance	43.70%		
Other plan	4.70%		
Housing Status			
Stable Permanent	81.30%		
Temporary	13.80%		
Unstable	4.90%		

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR

B9. AIDS Incidence in the Memphis TGA

While HIV disease surveillance data represents trends in HIV transmission, AIDS surveillance data reflects differences in access to testing and treatment. According to the Centers for Disease Control and Prevention (CDC) 2014 HIV Surveillance report, the Memphis Metropolitan Statistical Area (MSA) new AIDS diagnoses rate was 2nd among all MSAs **(Figure B-2)**. In the Memphis TGA, new AIDS cases decreased from 332 cases in 2013 to 113 cases in 2015. The West TN three counties (Shelby, Fayette, and Tipton) account for 90% of new AIDS diagnosis among all Memphis TGA counties **(Table B-8).** Preliminary data reflects a decrease in 2015 among newly diagnosed AIDS cases; however, this number is provisional and will likely increase.

Table B-8: New AIDS Diagnoses by Region in Memphis TGA, 2011 – 2015

	2011		2012		2013		2014		2015*	
	N	%	N	%	N	%	N	%	N	%
Memphis TGA Total	280		244		332		161		133	
West TN 3 Counties	251	90%	227	93%	318	96%	136	84%	120	90%
North MS & Crittenden County	29	10%	17	7%	14	4%	25	16%	13	10%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

**: preliminary data, subject to change*

In comparing five years of trend data, a 53% decrease of new AIDS disease rate was observed between 2011 and 2015 (**Table B-8**). This decrease occurred among both males and females; however, females reported slightly larger reductions in AIDS disease incidence than males. AIDS incidence rates among males (14.6 per 100,000) are over twice female rates (5.8 per 100,000) in the Memphis TGA. Blacks represent the majority of new AIDS cases; the AIDS incidence rate among Non-Hispanic Black individuals (18.9 per 100,000) was more than 10 times that of Non-Hispanic Whites (1.8 per 100,000). AIDS incidence rates decreased among all age groups. Persons aged 45-54 years reported to be the highest number of newly diagnosed AIDS case in 2011. However, this proportion of incidence rate was shifted to the younger age group 25-34 years old. Over the past five years between 2011 and 2015, least amount of AIDS incidence rate (-38%) reduction was observed among the age group 25-34 years old.

Table B-9: Rates of Newly Diagnosed AIDS Cases (per 100,000 persons) by Demographic Characteristics, Memphis TGA, 2011 – 2015

	2011		2012		2013		2014		2015*		2011-2015
	N	Rate	N	Rate	N	Rate	N	Rate	N	Rate	% Change
Total	**280**	**21.1**	**244**	**18.4**	**332**	**25.0**	**161**	**12.1**	**133**	**10.0**	**-53%**
Gender											
Male	193	30.3	154	24.2	226	35.5	115	18.0	93	14.6	-52%
Female	87	12.6	90	13.0	106	15.3	46	6.7	40	5.8	-54%
Race/Ethnicity											
White, not Hispanic	19	3.2	26	4.3	26	4.3	15	2.5	11	1.8	-42%
Black, not Hispanic	241	39.6	207	34.0	225	37.0	135	22.2	115	18.9	-52%
Hispanic	10	14.7	6	8.8	12	17.6	4	5.9	7	10.3	-30%
Other Race	10	20.6	5	10.3	69	142.3	7	14.4	0	0.0	-100%
Age at Diagnosis (Years)											
0 - 14	0	0.0	0	0.0	3	1.1	1	0.4	1	0.4	NA
15 - 19	7	7.2	1	1.0	44	45.5	3	3.1	1	1.0	**-86%**
20 - 24	26	27.5	17	18.0	101	106.9	13	13.8	10	10.6	-62%
25 - 34	69	37.9	68	37.4	56	30.8	47	25.8	43	23.6	-38%
35 - 44	66	37.5	75	42.6	58	32.9	45	25.5	34	19.3	-48%
45 - 54	72	39.0	57	30.9	46	24.9	30	16.2	32	17.3	-56%
55+	40	12.9	26	8.4	24	7.8	22	7.1	12	3.9	-70%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR; 2010-2014 ACS Survey 5-Year;

**: preliminary data, subject to change*

Table B-10: Demographics for persons newly diagnosed in 2015 with HIV Disease

	TN	AR*	MS*	Memphis TGA	Nashville TGA
Gender					
Male	455	254	378	247	174
Female	119	76	109	67	36
Race/Ethnicity					
Black/African American	357	180	380	270	121
White	180	116	81	30	72
Hispanic	31	20	14	13	12
Asian	8	4			
Other	4	10	12	1	5
Race/Ethnicity - Males					
Black/African American	284				
White	136				
Hispanic	27				
Asian	4				
Other	4				
Race/Ethnicity - Females					
Black/African American	68				
White	43				
Hispanic	4				
Asian	4				
Other	0				
Age					
<15	8	2		2	0
15-24	169	82		96	44
25-34	209	100		102	73
35-44	90	58		49	51
45-54	71	61		41	31
55-64	28	19		24	7
65+	5	8			4
Transmission Category					
Heterosexual	146	39		79	24
IDU	35	17		10	5
MSM	381	165		135	128
MSM/IDU	15	9		0	2
Perinatal	5	1		2	0

Snapshot of Tennessee Incidence Data:

- Of the 711 persons newly diagnosed in TN with HIV disease in 2015, 18.4% were classified as stage 3 (AIDS) cases by the end of 2015.
- In TN, males represented the largest proportion of persons newly diagnosed with HIV disease (78.9%). The rate of new HIV disease diagnoses was 4.1 times as high among males compared to females.
- In TN, a greater proportion of the newly diagnosed cases occurred among blacks/African Americans compared to living cases (59.4% and 33.1% respectively). The rate of new HIV disease cases was 8.3 times as high among blacks/African Americans compared to whites.
- In TN, the greatest proportion of newly diagnosed cases occurred among persons 25-34 years of age (34.6%). The rate of new HIV disease diagnoses was greatest among persons 25-34 years of age at the end of 2014 (28.2 per 100,000)

Source: TDOH 2015 HIV Epidemiological Profile

B11. Late HIV Diagnosis

Late HIV Diagnosis is one of the system level indicators for Department of Health and Human Services (HHS) – funded HIV programs and services of the HIV/AIDS Bureau. Late HIV diagnosis defined as: Number of persons with a diagnosis of Stage 3 HIV infection (AIDS) within 3 months of diagnosis of HIV infection in the 12-month measurement period. The West Tennessee three counties (Shelby, Fayette, and Tipton) in the Memphis TGA accounted for 90 % of new AIDS diagnoses in 2015 (**Table B-7**). *Due to the limitation of Late HIV diagnosis data availability from the north Mississippi four counties and Crittenden County in Arkansas, Late HIV diagnosis in the Memphis TGA can be described by using the west Tennessee three counties data.*

The Proportion of Late HIV Diagnosis decreased from 27% in 2013 to 12% in 2015. Among the 282 newly diagnosed HIV cases in 2015, 34 of them were diagnosed as stage 3 HIV infection (AIDS) within the three months of HIV diagnosis in 2015 (**Table B-11**). The majority of the Late HIV Diagnosed cases were males (88%), Non- Hispanic Blacks (79%), older adults aged 45-54 years old (35%), and MSM contacts (50%) **(Figure B-4)**.

While the Late HIV incidence rate indicates that new cases are not being identified as early as possible, comparing to 2013 data, 55% reduction of late HIV diagnoses shows the successful implementation of EIIHA program in the West Tennessee three counties in 2015.

Table B-11: Late HIV Diagnoses in the West Tennessee Three Counties of Memphis TGA, 2011 – 2015**

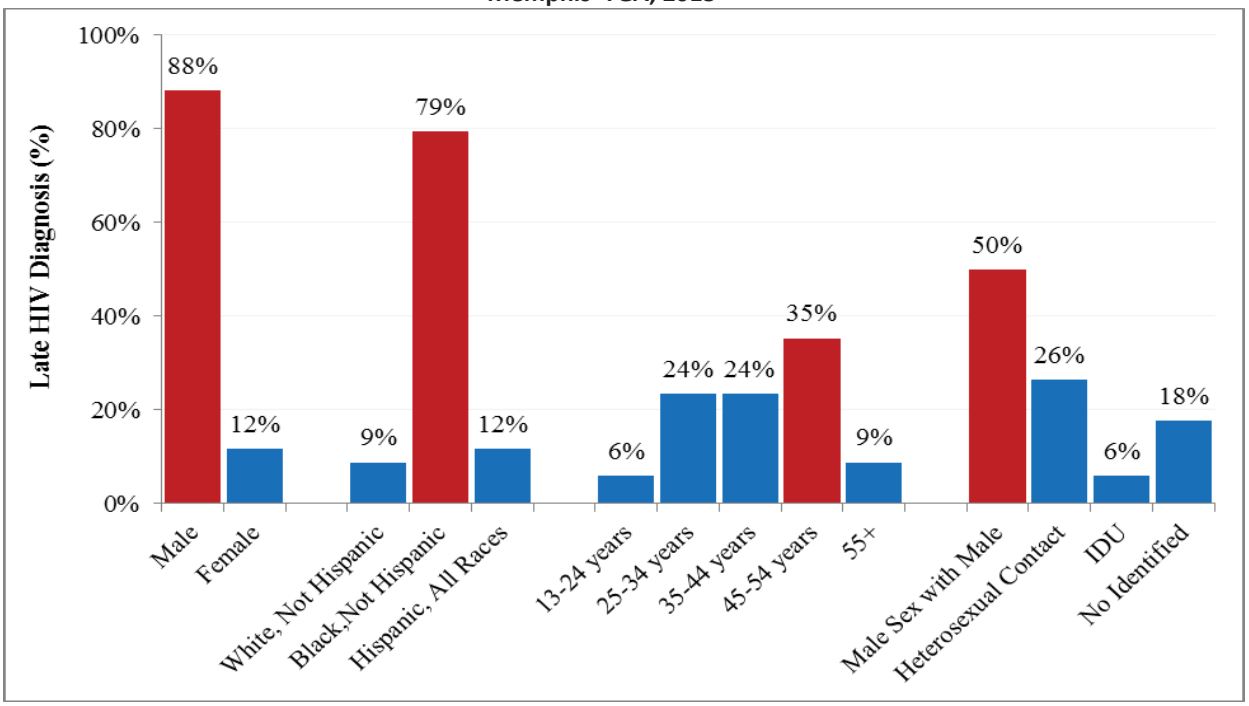
	Year of Initial HIV Diagnoses				
	2011	**2012**	**2013**	**2014**	**2015***
Total New HIV Diagnoses	369	393	313	296	282
Late HIV Diagnoses (N)	73	72	85	49	34
Late HIV Diagnoses (%)	20%	18%	27%	17%	12%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

**: preliminary data, subject to change.*

***: Data was requested from ADH and MDH but was not received at the time of this submission.*

Figure B-4: Demographic Characteristics of Late HIV Cases in the West Tennessee Three Counties of Memphis TGA, 2015*,**



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

**: preliminary data, subject to change.*

***: Data was requested from ADH and MDH but was not received at the time of this submission.*

B.12 HIV Mortality

The mortality data in persons with HIV infection **(Table B-10)** shows an average 126 deaths occurred in the Memphis TGA between 2010 and 2014. During this period of time the proportion of deaths among the HIV infected persons was stable by gender, racial/ethnic groups, and risk exposure category. The majority of deaths occurred among the males and not Hispanic Blacks. In comparing the five year data between 2010 and 2014, the proportion of deaths among the younger age group decreased, the higher proportion of deaths occurred among the older age group. The older age group 45+ years old accounted for 25% deaths in 2010, the same age group accounted for 41% of deaths in 2014. Although the number of death among the PLWHA did not significantly changed between 2010 and 2014, the proportion of death shifted from younger age groups to older age groups. This success of increasing life span of PLWHA may be due to the improvement of HIV prevention and care measures. It is important to note that **Table B-10** does not reflect all deaths caused by HIV disease.

Table B-10: HIV Mortality by Demographic Characteristics, West TN Three Counties of Memphis TGA, 2010 – 2014**

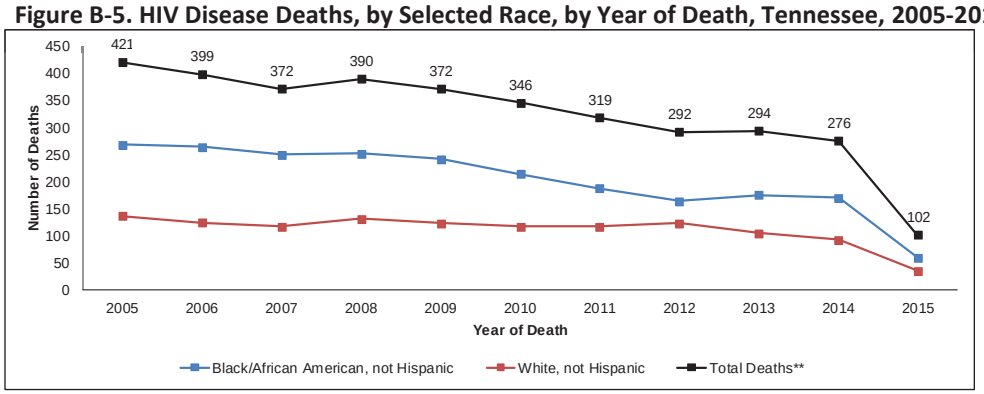
	2010		2011		2012		2013		2014	
	N	%	N	%	N	%	N	%	N	%
Total	152	100%	122	100%	111	100%	136	100%	108	100%
Gender/Sex										
Male	99	65%	83	68%	74	67%	96	71%	64	59%
Female	53	35%	39	32%	37	33%	40	29%	44	41%
Race/Ethnicity										
White, Not Hispanic	19	13%	14	11%	7	6%	18	13%	8	7%
Black, Not Hispanic	129	85%	105	86%	102	92%	116	85%	98	91%
Hispanic, All Races	3	2%	2	2%	0	0%	0	0%	1	1%
Other, Not Hispanic	1	1%	1	1%	2	2%	2	1%	1	1%
Age at Death										
15 to 19	4	3%	1	1%	1	1%	1	1%	2	2%
20 to 24	19	13%	18	15%	14	13%	12	9%	11	10%
25 to 34	43	28%	30	25%	32	29%	35	26%	22	20%
35 to 44	49	32%	36	30%	34	31%	35	26%	29	27%
45 to 54	27	18%	27	22%	26	23%	38	28%	29	27%
55+	10	7%	11	9%	4	4%	15	11%	15	14%
Risk/Exposure										
Male Sex with Male	55	36%	30	25%	29	26%	43	32%	23	21%
Heterosexual Contact	62	41%	51	42%	43	39%	46	34%	52	48%
MSM/IDU	3	2%	1	1%	3	3%	4	3%	2	2%
IDU	7	5%	8	7%	8	7%	9	7%	4	4%
Other Risk	0	0%	1	1%	0	0%	0	0%	0	0%
No Identified	25	16%	31	25%	28	25%	34	25%	27	25%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

***: Data was requested from ADH and MDH but was not received at the time of this submission.*

In Tennessee since 2010, the total number of deaths for persons living with HIV disease from any cause, has decreased from 346 to 102 deaths (***Figure B-5***). Although this overall trend is positive, the disparity for Blacks/African Americans compared to White/Caucasians, still exists.

Figure B-5. HIV Disease Deaths, by Selected Race, by Year of Death, Tennessee, 2005-2015



Source: TDH, 2015 Epi Profile

Nationally, CDC completes an estimate of the "probability of survival" for >3 years (36 months) for persons with diagnosed HIV infection and for persons whose infection had ever been classified as stage 3 (AIDS).

- HIV: In the US in 2009 of 43 states, 38 of those states had at least 9 of 10 persons survived after a diagnosis of HIV infection, including Tennessee. In Tennessee, the likelihood of survival from 2004 to 2009 has increased by 5.6%.
- AIDS: In the US in 2009, 34 out of 39 states had at least 8 of 10 persons survived after a stage 3 (AIDS) classification diagnosis, including Tennessee. In Tennessee, the likelihood of survival from 2004 to 2009 has increased by 13.3%.

Source: Nashville TGA 2015 Needs Assessment

In reviewing "deaths due to HIV", there is a noted difference between rates for the state and the largest counties of the state's two TGAs (Memphis and Nashville) as noted in *Table 4*. Both TGA's have a higher rate than the state, and Shelby County's rate is roughly three times higher than the state.

Table 4: 2014 Mortality Numbers & Rates (HIV Cause of Death)

	Mortality Rate	# of Deaths
TN	2.52	165
Davidson Co.	3.74	25
Shelby Co.	7.35	69

C. HIV-Related Co-Morbidities and Social Factors

C1. Sexually Transmitted Infections

Sexually transmitted infections (STIs) are known to increase the risk of both transmitting and acquiring HIV. According to the Centers for Disease Control and Prevention, the Memphis Metropolitan Statistical Area (MSA) ranked first in the country among the 50 largest MSAs in 2014 for Chlamydia and Gonorrhea infection[6]; the impacts of these extraordinarily high rates of STIs increase the risk of HIV infection within the Memphis TGA.

Table C-1: STD Incidence Rates (per 100,000 persons) in Memphis MSA and U.S. MSA total, 2010 – 2014

		2010	2011	2012	2013	2014
		Rate	Rate	Rate	Rate	Rate
Chlamydia	Memphis, TN-MS-AR	942.5	878.3	949.8	802.2	786.6
	U.S. MSA TOTAL	450.9	479.2	474.2	462.7	474.6
Gonorrhea	Memphis, TN-MS-AR	309	288.7	335.2	230	195.6
	U.S. MSA TOTAL	113.7	116.4	120	118.1	122.8
Primary and Secondary Syphilis	Memphis, TN-MS-AR	12.5	9	8.2	7.8	7
	U.S. MSA TOTAL	6.3	6.3	7.1	7.8	8.7
Early Latent Syphilis	Memphis, TN-MS-AR	19.4	13.5	14	14	10.7
	U.S. MSA TOTAL	6.1	5.9	6.7	7.7	8.7
Late and Late Latent Syphilis	Memphis, TN-MS-AR	24.6	20.9	21.7	21.1	17.6
	U.S. MSA TOTAL	8.1	8.4	8.9	9.7	10.3

Data Source: Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2014. Atlanta: U.S. Department of Health and Human Services; http://www.cdc.gov/std/stats14/surv-2014-print.pdf

C2. Chlamydia

According to the 2010 CDC Sexually Transmitted Disease Treatment Guidelines, sexually active PLWHA should be screened annually for Chlamydia, as infection is often asymptomatic and unlikely to be recognized unless testing occurs[7]. Chlamydia incidence rates in the Memphis TGA steadily decreased from 949.8 in 2012 to 786.6 (per 100,000 persons) in 2014 **(Table C-1)**. However, the incidence rate of chlamydia still remained almost twice the incidence rate of national MSAs during 2011-2015. Chlamydia incidence rate in Shelby County residents was higher than that of Memphis MSA, and almost two times higher than that of Tennessee and the national MSAs total average rate in 2014.

Table C-1: Chlamydia Incidence Rates (per 100,000 persons) of Reported Cases in Memphis, TN-MS-AR and U.S. MSA, 2011 - 2015

Regions	2011		2012		2013		2014		2015	
	CT*	GC*	CT	GC	CT	GC	CT	GC	CT	GC
	Rate		Rate		Rate		Rate		Rate	
Shelby County	1,046.0	361.1	1,060.0	392.9	908.3	268.7	865.8	231.2	867.4	275.8
Memphis, TN-MS-AR	878.3	288.7	949.8	335.2	802.2	230	786.6	195.6	NA	NA
MSAs Total	479.2	116.4	474.2	120	462.7	118.1	474.6	122.8	NA	NA
Tennessee	285.3	119.7	309.8	140.9	295.7	113.5	474	110.8	479	129

*Data Source: PRISM TN; http://www.cdc.gov/std/stats14/surv-2014-print.pdf; *: CT=Chlamydia; GC=Gonorrhea*

The main burden of Chlamydia and Gonorrhea infections are on adolescents and young adults in the Memphis TGA. Chlamydia rates (3,903.8 per 100,000 persons) among Shelby County adolescents age 15-19 years old are approximately two times rates of those in Tennessee and U.S. totals in 2014 **(Table C-2**). There were 136 co-morbid cases of HIV/Chlamydia reported in Shelby County during 2014, with 8,122 total cases of chlamydia reported in the general population **(Table 3-4**). In 2014, the Chlamydia rate among PLWHA (2,160 per 100,000 persons) was almost 2.5 times the rate reported in the general population (864.6 per 100,000 persons).

Table C-2: Chlamydia and Gonorrhea Rates among Adolescents ages 15-19 Years, Shelby County and Tennessee, and National, 2014

Diseases	15-19 years old					
	US Total		Tennessee		Shelby County	
Chlamydia	381,717	1,804.0	9,002	2,114.2	2,679	3,903.8
Gonorrhea	68,468	323.6	1,565	367.6	610	888.9

Data Source: PRISM, TN. http://www.cdc.gov/std/stats14/surv-2014-print.pdf

C3. Gonorrhea

In addition to annual Chlamydia screening, CDC guidelines also recommend annual screening for Gonorrhea among sexually active PLWHA[7]. Gonorrhea rates in the Memphis MSA have declined since 2012, but remained two times the National MSA rate in 2014 (**Table C1)**. Gonorrhea rates (888.9 per 100,000 persons) among Shelby County adolescents age 15-19 years old are almost three times those of U.S. total adolescents of the same age (**Table C-2)**. The Gonorrhea rate identified in 2014 among the PLWHA population (1,636 per 100,000 persons) is over three times the rate reported among the total TGA population (231.2 per 100,000 persons) for Shelby County (**Table C-4)**.

The Memphis TGA has the highest reported sexually transmitted infection rates in the U.S. For all the nationally notifiable STIs, Chlamydia and Gonorrhea rates in the Memphis TGA are double or more than

double the average national rate among the general population. Although the largest fractions of those cases are diagnosed in 15-24 year old patients, rates remain high in all population groups in the Memphis TGA when compared with national rates.

C4. Syphilis

Syphilis remains a significant problem in the South and in urban areas of the United States. Increases in cases among MSM have occurred and have been characterized by high rates of HIV co-infection and high-risk sexual behaviors nationally[8]. **Table C-1** shows that while U.S. MSAs total early and late latent syphilis rates were increasing, Memphis MSA Syphilis rates were decreasing trend between 2010 and 2014. Following a peak of 12.5 per 100,000 persons in 2010 in Memphis MSA, the Primary and Secondary (P&S) Syphilis rate declined by 44% to 7.0 per 100,000 persons in 2014. Late Latent Syphilis rates decreased by 28% during this time period, but remained more than 1.5 times higher than that of national rates. This trend of decreasing rate of all Syphilis incidences indicates the improvement of prevention and treatment measures in the Memphis TGA.

Table C-3: Syphilis Rates (per 100,000 persons) of Reported in Memphis TN-MS-AR and U.S. MSA, 2010 - 2014

Diseases	Regions	2010	2011	2012	2013	2014
		Rate	Rate	Rate	Rate	Rate
Primary and Secondary Syphilis	Memphis, TN-MS-AR	12.5	9	8.2	7.8	7.0
	U.S. MSA TOTAL	6.3	6.3	7.1	7.8	8.7
Early Latent Syphilis	Memphis, TN-MS-AR	19.4	13.5	14	14	10.7
	U.S. MSA TOTAL	6.1	5.9	6.7	7.7	8.7
Late and Late Latent Syphilis	Memphis, TN-MS-AR	24.6	20.9	21.7	21.1	17.6
	U.S. MSA TOTAL	8.1	8.4	8.9	9.7	10.3

Data Source: PRISM, TN. http://www.cdc.gov/std/stats14/surv-2014-print.pdf

In 2015, there were 47 co-morbid cases of HIV/P&S Syphilis reported in Shelby County, with 106 total cases in the general population (**Table C-4**). The rate among PLWHA (743 per 100,000) was 66 times the rate reported in the general population (11.3 per 100,000). P&S syphilis may be easily treatable with antibiotics; however, treatment for HIV/syphilis co-infection may be more difficult and costly. Patients with HIV may have atypical antibody response to treatment, resulting in the need for repeated testing and follow-up.

Table C-4: STD Co-Morbidities Reported Among Persons Living with HIV Disease and the General Population, Shelby County TN, 2015

	Among the General population		Among the PLWHA	
	N	Rates (per 100,000 persons)	N	Rates (per 100,000 persons)
Tuberculosis (TB)	49	5.2	4	63.2
P&S Syphilis	106	11.3	47	743
Gonorrhea	2,582	275.2	102	1612.4
Chlamydia	8,122	865.8	132	2086.6

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; NEDSS, TN; PRISM, TN.

As outlined in **Table C-4**, the high level of co-infection rate of STDs among PLWHA shows that there is ongoing sexual risk-taking among the HIV infected MSM in Shelby County. The higher concentration of HIV/P&S Syphilis co-infection occurred in the higher HIV incidence and prevalence zip code areas (38103 - 38105, 38107, 38126, 38115) in downtown and south Memphis, and the lower level of concentration of HIV/STD co-infection occurred further from the highly concentrated HIV incidence and prevalence zip code areas **(Map C-1)**. This finding is of special concern because STDs facilitate HIV transmission.

Among the PLWHA in Memphis TGA, STI infection rates are double or more than double the rates of those infections in the HIV-negative population. The evidence is overwhelming that STI and HIV co-infection has a tremendous adverse impact on our PLWHA clients and also demonstrates the need for a combination of increased transmission risk-reduction education and viral load suppression for PLWHA clients and citizens living in the TGA. Together these strategies can help slow the transmission of HIV in the community. These strategies are important for all PLWHA in the Memphis TGA, but young black MSM should particularly continue to receive outreach intended to mitigate transmission risk because that sub-population seems to be the current focus of HIV transmission based on the available epidemiologic data.

C5. Tuberculosis (TB)

Among persons infected with latent tuberculosis (TB) infection, HIV is the strongest risk factor for progressing to active TB disease. Over a lifetime, only 10 percent of people with latent TB infection who have normal immune systems will progress to develop active disease[9]. Untreated latent TB infection can quickly progress to TB disease in people living with HIV since the immune system is already weakened. And without treatment, TB disease can progress from sickness to death. TB is also one of the AIDS-Defining Conditions. Thus, TB screening for PLWHA is particularly important. According to CDC, direct costs (in 2010 U.S. dollars) average from $17,000 to treat drug-susceptible TB to $430,000 to treat the most drug-resistant form of the disease (XDR TB).

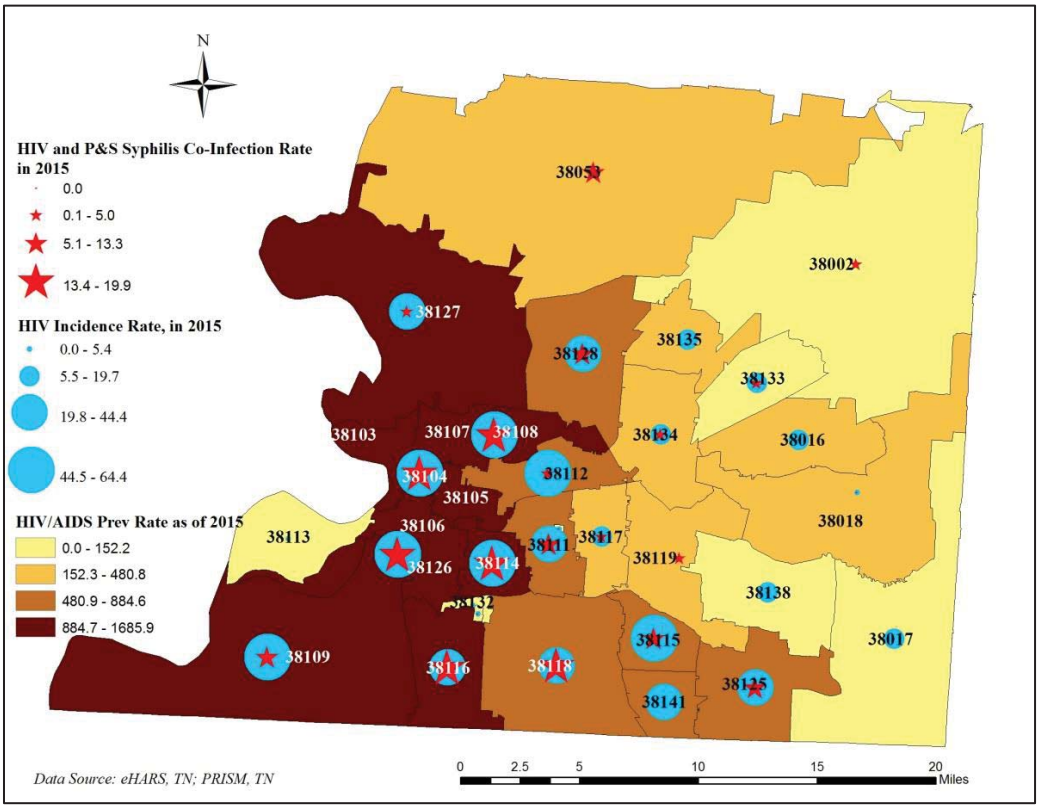
Table C-5: Tuberculosis Cases and Rates in Shelby County and Memphis MSA, 2014

Regions	Number of Cases	Rate (per 100,000 persons)
Shelby County	52	**5.5**
Memphis, TN-MS-AR	60	4.5
Tennessee	151	**2.3**
MSAs Total	7,553	3.5
US Total	9,421	**3.0**

Data Source: The National Electronic Disease Surveillance System (NEDSS);
http://www.cdc.gov/tb/statistics/reports/2014/pdfs/tb-surveillance-2014-report_updated.pdf

In 2014, 60 new TB cases were diagnosed in the Memphis Metropolitan Statistical Area (MSA). In the Memphis MSA, TB incidence rate (4.5 per 100,000 persons) was higher than that of total MSAs in the nation (3.5 per 100,000 persons); and almost two times higher than the rate of Tennessee (2.3 per 100,000 persons). TB incidence rate in Shelby County (5.5 per 100,000 persons) was more than 1.5 times the rate of total MSAs in the Nation **(Table C-5)**. In 2015, newly reported tuberculosis case rate (63.2 per 100,000 persons) among the PLWHA was more than 12 times the rate (5.2 per 100,000 persons) reported in the general population in Shelby County **(Table C-4)**.

Map C-1: Rates (per 100,000) of HIV/AIDS Prevalence, Incidence, and Co-Infected P&S Syphilis, Shelby County, 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; NEDSS, TN; PRISM, TN.

D. Indicators of HIV Risk among Disproportionately Impacted Populations

TGA Key Indicators for HIV Risk:

HIV is primarily spread by having participated in high-risk behavior or sharing syringes and other injection equipment with someone who is infected with HIV. In addition, substance use can contribute to these risks indirectly because alcohol and other drugs can lower people's inhibitions and increase risk factors for HIV transmission. Also, having another STI can increase risk of contracting HIV disease. *Table D1* provides a quick review of a few key data points related to risk.

Table D-1: HIV Risk Factor Data

	US	TN	AR	MS	Davidson County	Memphis TN
Youth Risk Behavior Survey 2013 : Did not use a condom	40.9%	41.4%	44.9%	49.0%	Not reported	32.5%
		YRBS 2013				
Youth Risk Behavior Survey 2015 : Ever injected any illegal drug	2.4%	4.7%	4.2%	2.5%	Not reported	3.5%
		YRBS 2013				
Youth Risk Behavior Survey 2015: Had at least 1 drink of alcohol on at least 1 day during the last 30 days.	32.8%	28.4%	27.6%	31.5%	Not reported	23.4%
		YRBS 2013				
Youth Risk Behavior Survey 2015: Used marijuana 1 or more times during the last 30 days.	21.7%	21.4%	19.0%	21.6%	Not reported	26.9%
		YRBS 2013				
Adult Risk Behavior Survey 2013: Ever been tested for HIV		43.5%			54.3%	50.4%
Adult Risk Behavior Survey 2012: Participated in high-risk behavior in the past year.		4.2%			4.1%	4.4%
NSDUH Survey 2012: Any illicit drug use in the past year. (adults)	14.70	14.50			18.10	
NSDUH Survey 2012: Binge alcohol use in the past month. (adults)	23.20	18.10			20.10	

◆ See the Tennessee Department of Health Plan for more information about indicators of risk for HIV infection.

Certain populations are at greater risk of becoming infected or living with HIV disease. ***Table D2*** notes the populations that are at high-risk and must be at the forefront of community efforts in planning and service provision.

Table D2: High Risk Populations

	TN	AR	MS	Memphis TGA	Nashville TGA
Young persons, age 15-24	√	√	√	√	√
Incarcerated	√	√	√	√	√
MSMs	√	√	√	√	√
Homeless/Unstably housed	√	√	√	√	√
Persons with substance abuse diagnosis, particularly injection drug users	√	√	√	√	√
Persons with a mental health diagnosis	√	√	√	√	√

Snapshot of Tennessee Data:

- Of 711 cases diagnosed from January 1 to December 31, 2015, 18.1% did not have a reported risk as of June 30, 2016. Surveillance activities have been implemented to resolve cases reported with unknown risk information.
- The majority of living cases are attributed to MSM (48.4%), with cases attributed to heterosexual contact representing the second greatest proportion (26.0%).
- There are differences in the distribution of exposure categories among living cases by race/ethnicity. Among whites, 64% of living cases are attributed to MSM, compared to 39% among blacks/African Americans. In contrast, heterosexual contact represents the exposure category for 34% of living black/African American cases, but only 14% of living white cases.

Source: TDOH 2015 HIV Epidemiological Profile

The epidemic continues to disproportionately impact several populations within the Memphis TGA, including Non-Hispanic Black males who have sex with males (MSM), youth and young adults between the ages of 15-34, Non-Hispanic Black women of child-bearing age, Hispanics, those formerly incarcerated PLWHA and those who are homeless.

D1. Black/African American MSMs

HIV testing data shows that the highest number of tests (n=19,589, 85%) were conducted for the Non-Hispanic Blacks at the Shelby County Health Department in 2015. Among the other race/ethnic groups, Non-Hispanic Blacks show highest test positivity **(Table D-6)**. Although the numbers of newly diagnosed HIV cases have decreased 16% from 309 cases to 261 cases among the Non-Hispanic Blacks between 2011 and 2015, the proportion of new HIV cases of the Non-Hispanic Blacks among the other race/ethnicity did not show significant decrease (**Table D-5)**. As outlined in **Table D-1** Non- Hispanic Blacks accounted for 86% of all newly diagnosed HIV disease cases in the West Tennessee three counties

in 2015. Male-to-male sexual contact represents the largest portion of cases (59%) among the Non-Hispanic Black males. In addition, 86% of newly diagnosed AIDS cases were among the Non-Hispanic Blacks in the Memphis TGA, in 2015 **(Table D-8)**.

Table D-1: Newly Diagnosed HIV Cases among the Black Males in the West Tennessee Three Counties of Memphis TGA, 2015*'**

	In West TN		Male		Black		Black Males	
Total	**282**	**100%**	**220**	**78%**	**243**	**86%**	**191**	**68%**
Gender/Sex								
Male	220	78%	220	100%	191	79%	191	100%
Female	62	22%	NA	NA	52	21%	NA	NA
Race/Ethnicity								
White, Not Hispanic	26	9%	20	9%	NA	NA	NA	NA
Black, Not Hispanic	243	86%	191	87%	NA	NA	NA	NA
Hispanic, All Races	12	4%	9	4%	NA	NA	NA	NA
Other, Not Hispanic	1	0%	0	0%	NA	NA	NA	NA
Age at Diagnosis								
0 to 14	2	1%	1	0%	2	1%	1	1%
15 to 19	12	4%	10	5%	11	5%	9	5%
20 to 24	71	25%	62	28%	69	28%	60	31%
25 to 34	92	33%	74	34%	82	34%	69	36%
35 to 44	45	16%	29	13%	34	14%	21	11%
45 to 54	38	13%	29	13%	30	12%	23	12%
55+	22	8%	15	7%	15	6%	8	4%
Risk/Exposure								
Male Sex with Male	124	44%	124	56%	113	47%	113	59%
Heterosexual Contact	77	27%	40	18%	64	26%	35	18%
IDU	10	4%	5	2%	7	3%	3	2%
Perinatal Exposure	2	1%	1	0%	2	1%	1	1%
No Identified	69	24%	50	23%	57	23%	39	20%

Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

***: preliminary data subject to change*

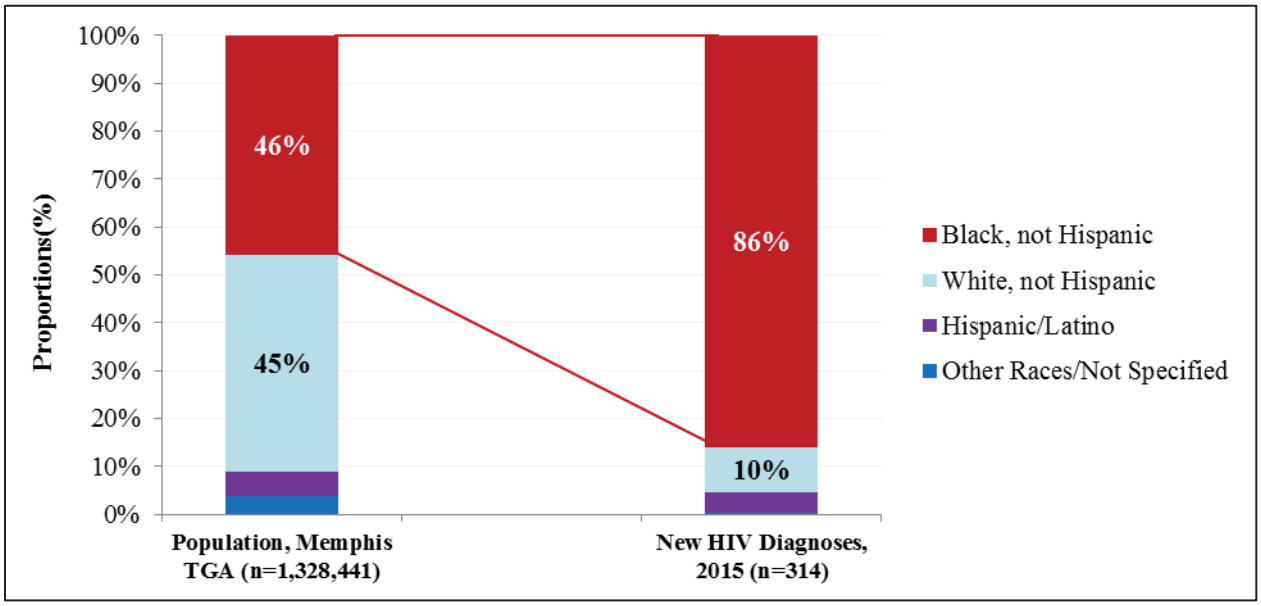
***: Data was requested from ADH and MDH but was not received at the time of this submission.*

A large percentage of newly diagnosed cases (28%) have unidentified risk/exposure, which causes limitations in fully understanding the incidence of infection among males attributed to MSM or heterosexual contact in 2014 (**Table D-5)**. The high percentage of cases for which no transmission category was identified may be due in part to under-reporting of male-to-male sexual activity because of stigma. In addition, unidentified risk exposure may be assigned among heterosexuals if no HIV-infected or high-risk partners could be identified. The disproportionally impact of HIV/AID on Non-Hispanic Blacks is shown in **Figure D-1**. Non-Hispanic Blacks comprised 46% of the Memphis TGA population, they accounted for 86% of newly diagnosed HIV cases, while 10% of newly diagnosed cases were attributed to Non-Hispanic White counterparts.

Unmet need analyses and mortality rates furthermore suggest Non-Hispanic Black men are at an

increased risk for poor health outcomes. The 2015 unmet need analysis reported that 71% of individuals out of care were males, and approximately 82% were Non-Hispanic Blacks **(Table D-3).** The 2012 Ryan White Comprehensive Needs Assessment found that stigma among males may contribute to challenges to serving this population. Males were significantly more likely than females to report perceived HIV-related stigma; nearly 60% of those who sometimes/often thought their HIV diagnosis was punishment for things done in the past were men. Historically in the Black community there has been denial of MSM activity, significant stigma and profound lack of acceptance of MSM behavior. Many Black MSM do not identify as homosexual, making it particularly difficult to reach and serve this population. Others are socially and economically marginalized due to race, poverty, criminal history, mental illness, substance abuse and other factors. These issues create an additional layer of barriers to engage them in care. Also, it is believed that many Black MSM engage in heterosexual activity as well, thus fueling transmission of HIV to women. Given these factors, there is likely a significant service gap for Black MSM.

Figure D-1 Proportions of Population and Newly Diagnosed HIV Cases, Memphis TGA, 2015



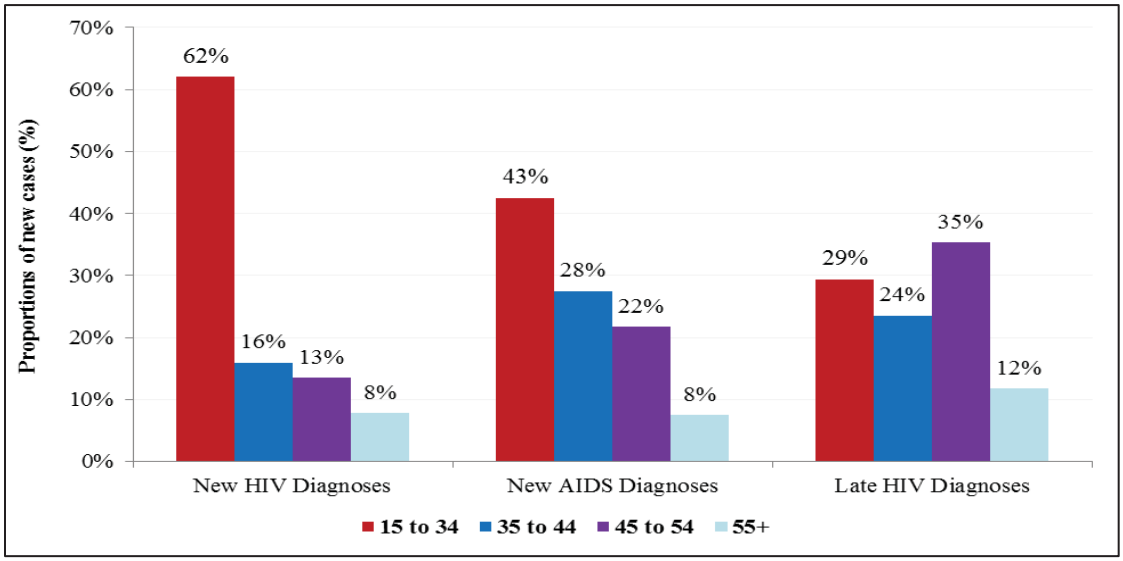
Data Source: U.S. Census Bureau, 2011-2014 5-Year American Community Survey; Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

D2. Adolescents and Young Adults Aged 15-34

The entire spectrum of HIV disease epidemic is shifting to adolescents and young adults in the Memphis TGA. Adolescents and young adults aged 15-34 years old accounted for 63% of new HIV cases in 2015 **(Table D-5)**. This disproportionate impact of new HIV infection was more notably expressed among the Black males in the same age group (72%) in West TN counties **(Table D-1)**. As outlined in the 2015 AIDS incidence data **(Table D-8),** the age group 15-34 years old accounts for 41% (n=54) new AIDS diagnosis in the Memphis TGA. Looking more closely to the West Tennessee three counties, 62% of newly HIV cases, 43% of newly AIDS cases, and 29% of late HIV cases were diagnosed among the age group 15 – 34 years old **(Figure D-2)**.

Unmet Need data demonstrates that higher proportions (47%) of the persons not receiving medical care were in the age-group 25-44 years old **(Table D-3)** in the West Tennessee Counties, in 2015. The HIV testing data shows the highest HIV testing positivity (5.2%) among the adolescents and youth aged 15-34 years old in the West Tennessee counties in 2015 **(Table D-6)**. According to the CDC HIV Surveillance report 2014, newly diagnosed HIV rates among the age group 15-19 years old and 20-24 years were almost three times higher in the Memphis TGA compared to that of among the same age group in the United States in 2014 **(Figure D-3)**.

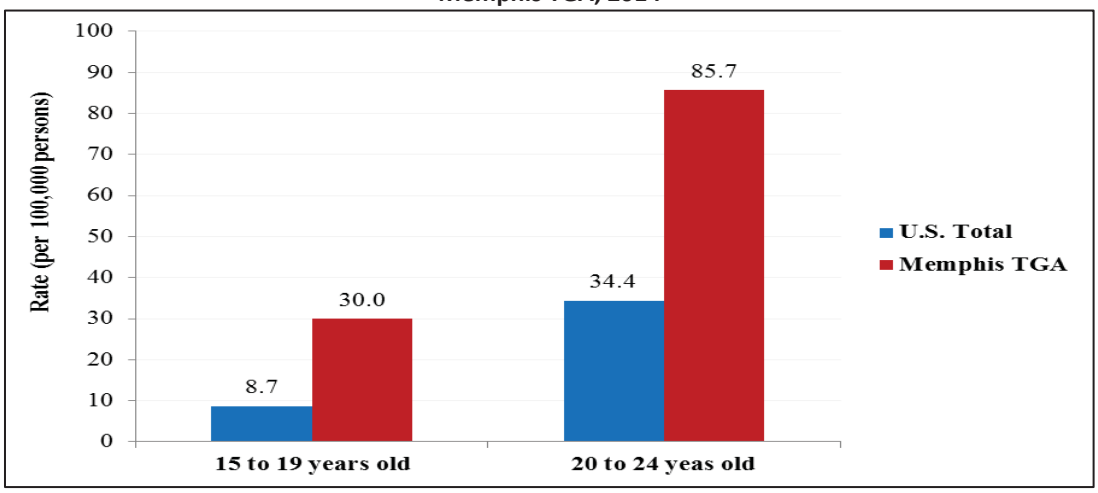
Figure D-2 New HIV, New AIDS, and Late HIV Diagnosis by Age Group, West Tennessee Three Counties of Memphis TGA, 2015**



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

***: Data was requested from ADH and MDH but was not received at the time of this submission.*

Figure D-3: Rates of Newly Diagnosed HIV Case (per 100,000 persons) by Age Group in United States and Memphis TGA, 2014



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; CDC (2014) HIV Surveillance Report, 2014.
http://www.cdc.gov/hiv/pdf/library/reports/surveillance/cdc-hiv-surveillance-report-us.pdf

The Youth Risk Behavioral Surveillance (YRBS) conducted in Memphis TN in 2013 reported that approximately 59.7% of respondents who had ever had sex, 15.2% were had sexual intercourse before age 13 years old which is almost four times of national average (3.9%), 38.2% were currently sexually active, 22.8% had four or more sexual partners, and 32.5% did not use a condom at last sexual intercourse. Compared to the National average, higher percentage of high school students have had condom use and HIV testing in Memphis TN **(Table D-2)**.

Table D-2: Sexual Health Responses from the Youth Risk Behavior Survey among 9-12th Graders in Memphis and the Nation, 2013 and 2015

	Memphis, TN 2013	United States 2015
had sexual intercourse before age 13 years	15.2 (13.0 - 17.6)	3.9 (3.2 - 4.8)
ever sexual intercourse	59.7 (55.4 - 63.8)	41.2 (37.5 - 45.0)
current sexual activity	38.2 (34.3 - 42.3)	30.1 (27.4 - 32.9)
multiple sex partners	22.8 (20.2 - 25.7)	11.5 (9.9 - 13.3)
did not use a condom at last sexual intercourse	32.5 (30.4 - 45.2)	48.0 (44.8 - 51.1)
were never tested for HIV	72.9 (70.4 - 75.4)	89.8 (88.2 - 91.3)

Source: http://www.cdc.gov/healthyyouth/data/yrbs/results.htm

In the 2012 Memphis TGA Ryan White Comprehensive Needs Assessment, young adults were significantly more likely to report engaging in risky sexual behaviors; among those 18-24 years, 29% reported having sex while drunk or high and 42% also reported having a prior STD diagnosis.

Youth and young adults face unique challenges in accessing care and other needed services. In a 2010 Needs Assessment report developed by the Tennessee Ryan White Part B Planning Group, youth identified several barriers to HIV care including incarceration, substance abuse, fear, and anxiety associated with HIV-related stigma. Eighty-one percent of the twenty-seven youth interviewed at St. Jude Children's Research Hospital felt depressed, worthless or hopeless in the past year. Unstable housing also contributed to 22% of youth having no place to stay at least once in the past year. Another 26% reported experiences with domestic violence. While many youth stated challenges in accessing care, some respondents who had interruption in treatment in the past five years noted favorable factors that facilitated their return back into care. These factors included outreach workers assisting with care, follow-ups from medical case managers, and direct help after jail/prison release.

The reports shows the need to develop new, collaborative, cross-institutional, coordinated care strategies capable of addressing the structural complexity of adherence barriers and unmet care and supportive service needs of HIV-infected youth. The report also suggested developing collaborative efforts to address the adherence barriers associated with incarceration, frequent substance use, unstable housing, access to food pantry and the need for support groups and psychosocial services that address the problem of HIV-related stigma.

D3. Black/African American Women of Child-Bearing Age

In Memphis TGA, 87% of women living with HIV/AIDS are Non-Hispanic Black, and 52% are between the child-bearing ages of 15-44 years according to 2015 data **(Table D-1)**. In the West Tennessee three counties, among the newly diagnosed female HIV cases, Non-Hispanic Black females account for 84% of new HIV cases, and 60% were infected through heterosexual contact in 2014 **(Table D-3)**. While the incidence of HIV disease has decreased significantly among women over the past five years, this population is of particular interest not only due to the health and well-being of women within the Memphis TGA, but also in the prevention of perinatal transmission.

Table D-3: Newly diagnosed HIV Cases Among Black Females in the West Tennessee Three Counties of the Memphis TGA, 2015*/**

	In West TN		Female		Black		Black Females	
Total	**282**	**100%**	**62**	**22%**	**243**	**86%**	**52**	**18%**
Gender/Sex								
Male	220	78%	NA	NA	191	79%	NA	NA
Female	62	22%	62	100%	52	21%	52	100%
Race/Ethnicity								
White, Not Hispanic	26	9%	6	10%	NA	NA	NA	NA
Black, Not Hispanic	243	86%	52	**84%**	NA	NA	NA	NA
Hispanic, All Races	12	4%	3	5%	NA	NA	NA	NA
Other, Not Hispanic	1	0%	1	2%	NA	NA	NA	NA
Age at Diagnosis								
0 to 14	2	1%	1	2%	2	1%	1	2%
15 to 19	12	4%	2	3%	11	5%	2	4%
20 to 24	71	25%	9	15%	69	28%	9	17%
25 to 34	92	33%	18	29%	82	34%	13	25%
35 to 44	45	16%	16	26%	34	14%	13	25%
45 to 54	38	13%	9	15%	30	12%	7	13%
55+	22	8%	7	11%	15	6%	7	13%
Risk/Exposure								
Male Sex with Male	124	44%	NA	NA	113	47%	NA	NA
Heterosexual Contact	77	27%	37	60%	64	26%	29	56%
IDU	10	4%	5	8%	7	3%	4	8%
Perinatal Exposure	2	1%	1	2%	2	1%	1	2%
No Identified	69	24%	19	31%	57	23%	18	35%

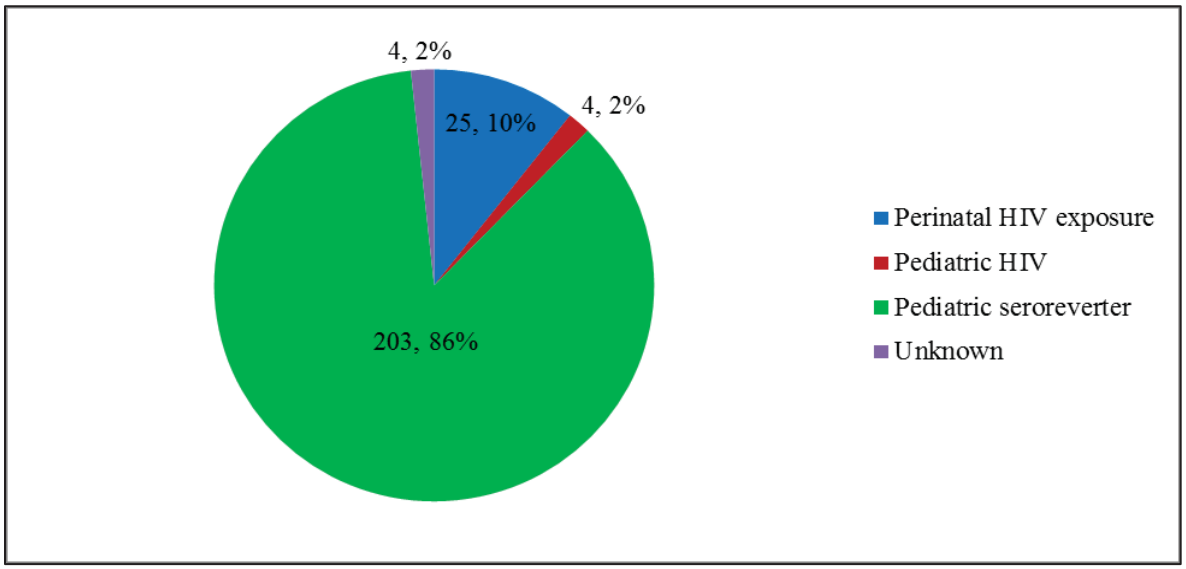
Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

***: preliminary data subject to change*

***: Data was requested from ADH and MDH but was not received at the time of this submission.*

D4. Perinatal transmission of HIV

Figure D-4: Babies born with HIV infected mothers by Diagnosed Status, West Tennessee Three Counties of the Memphis TGA, 2009 – 2013*

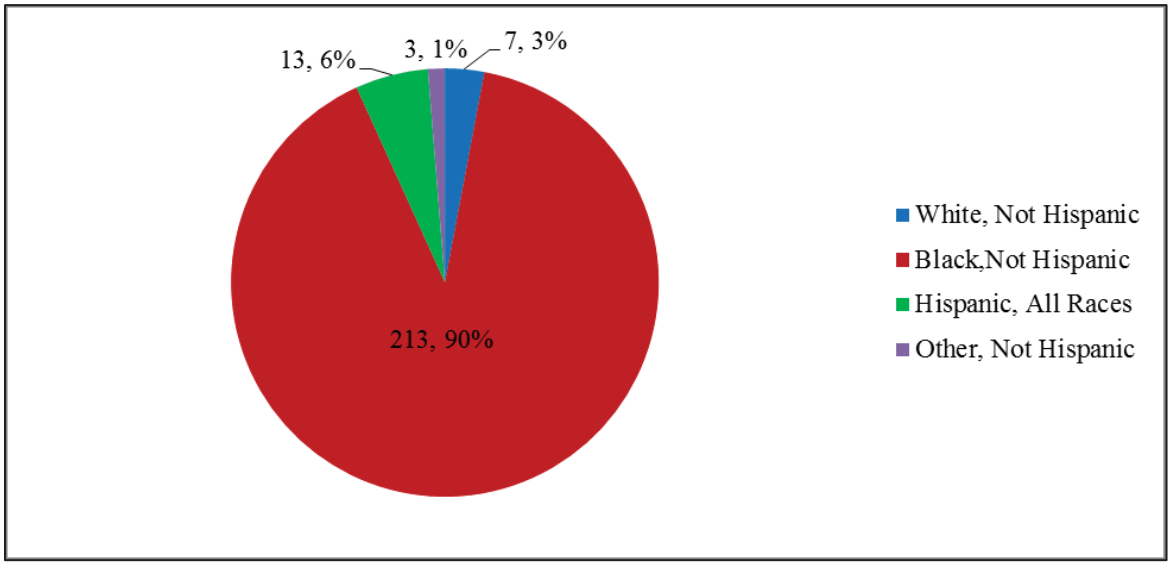


Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN;

**: Data was requested from ADH and MDH but was not received at the time of this submission.*

HIV transmission from mother to child during pregnancy, labor and delivery, or breastfeeding is known as perinatal transmission and is the most common route of HIV infection in children. When HIV is diagnosed before or during pregnancy, perinatal transmission can be reduced to less than 1% if appropriate medical treatment is given, the virus becomes undetectable, and breastfeeding is avoided. According to the TN eHARS data, 236 babies were born to HIV infected mothers in the West Tennessee three counties in five years between 2009 and 2013; 86% (n=166) babies were diagnosed as pediatric seroreverters, 10% babies were in pediatric HIV exposure status, and 2% of them were diagnosed as pediatric HIV **(Figure D-4)**. Of these, 90% (n=213) babies were born from the HIV infected Non-Hispanic Black mothers **(Figure D-5)**. During these five years, the number of babies born to HIV infected mothers decreased from 52 cases in 2011 to 41 cases in 2013, the proportion of pediatric seroreverters decreased from 92% to 76%. **(Figure D-6)**.

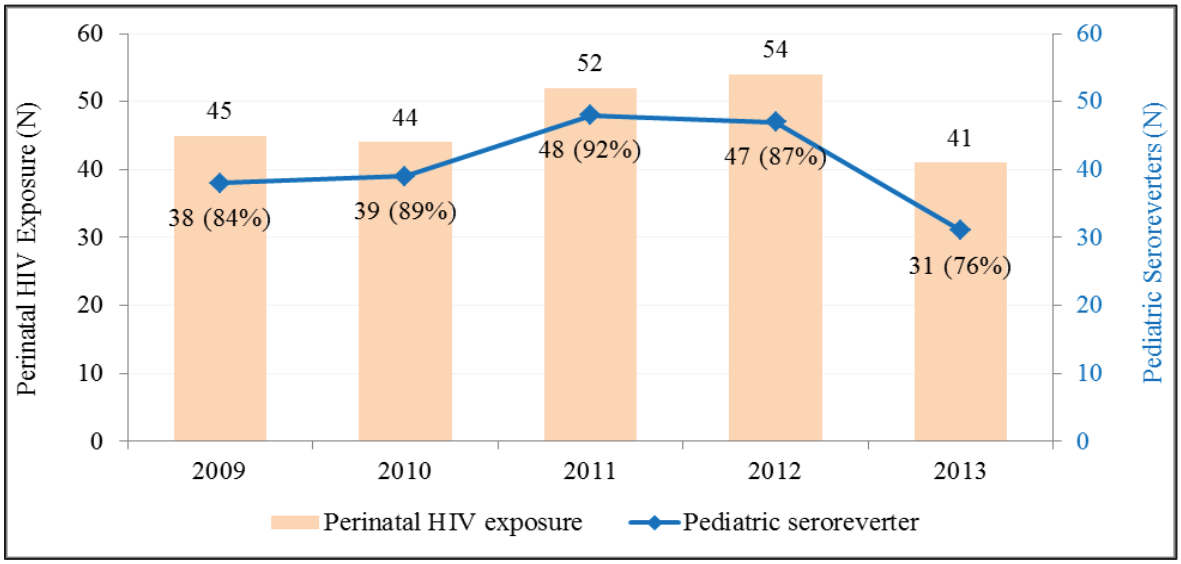
Figure D-5: Babies born with HIV infected mothers by Race/Ethnicity, West Tennessee Three Counties of the Memphis TGA, 2009 – 2013*



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN

**: Data was requested from ADH and MDH but was not received at the time of this submission.*

Figure D-6: Trends of Perinatal HIV infection, West Tennessee Three Counties of the Memphis TGA, 2009 – 2013*

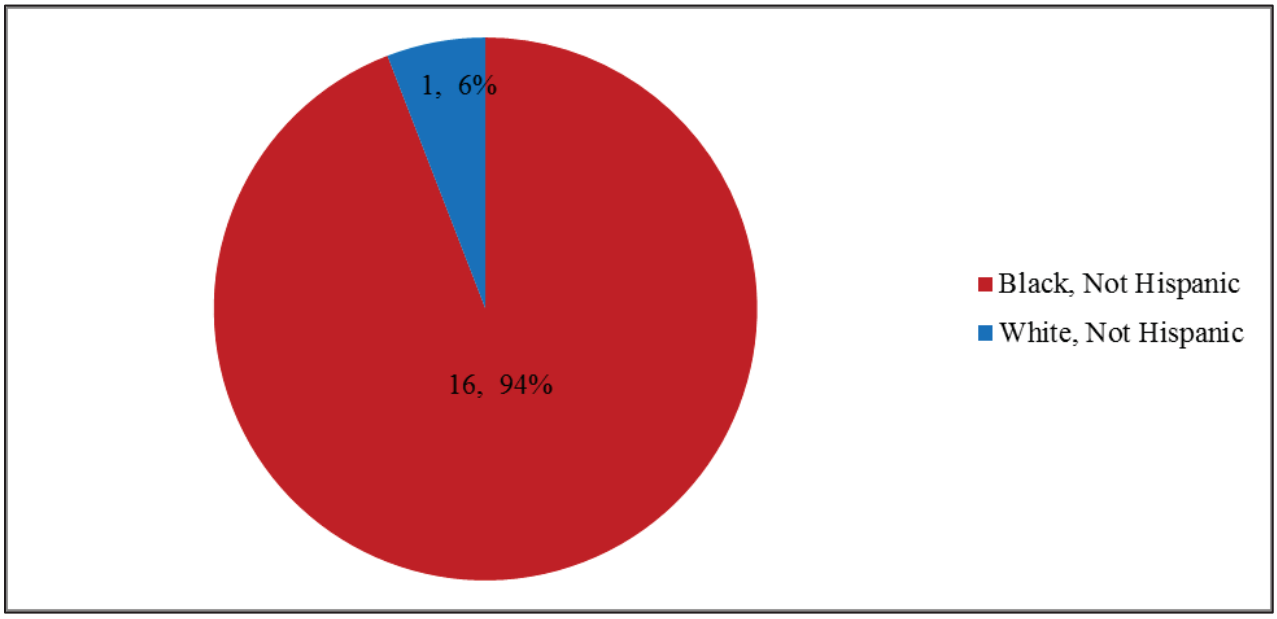


Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN

**: Data was requested from ADH and MDH but was not received at the time of this submission.*

According to the STD surveillance conducted by CDC in 2014, rates of congenital syphilis in Tennessee have continually decreased from 15.8 in 2009 to 2.5 in 2013. Between 2011 and 2015, 17 congenital syphilis cases were diagnosed among the West Tennessee three counties infants; 94% of these births occurred among infants born to Black mothers **(Figure D-6)**.

Figure D-7: Cumulative Congenital Syphilis Cases by Race/Ethnicity, the West Tennessee Counties, 2011 – 2015



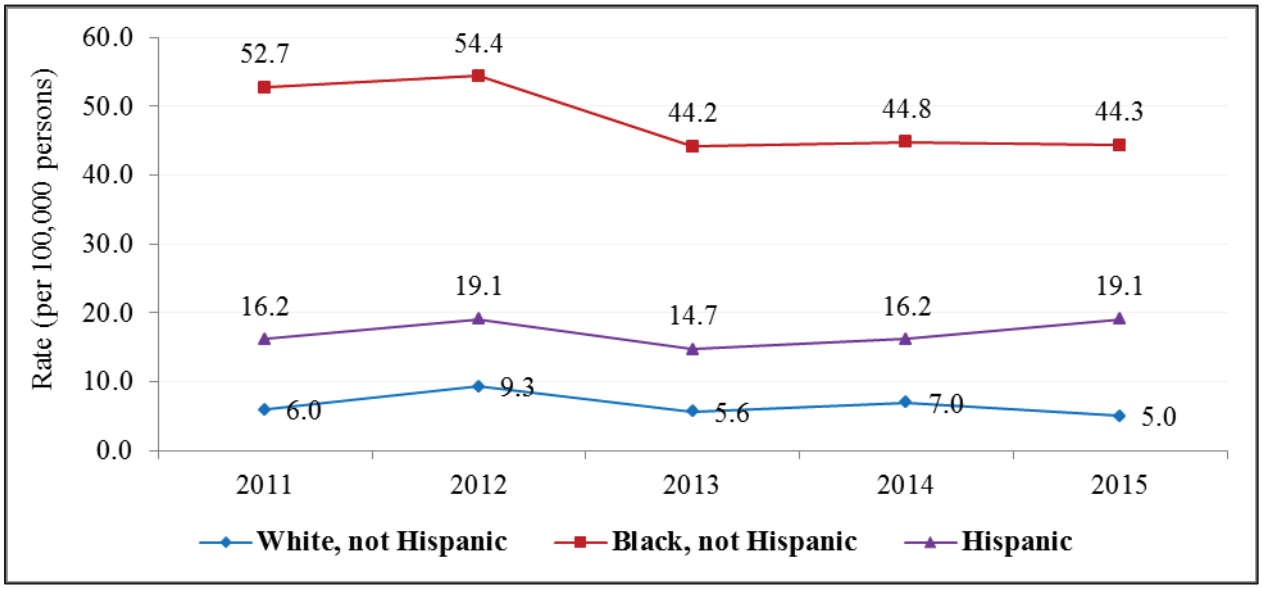
Data Source: PRISM, TN;

The Unmet Need data **(Table 6-3)** shows Non-Hispanic Black women of child-bearing age account for 53% of clients with all unmet need females, and the main modes of HIV transmission (65%) was Heterosexual for those not receiving medical care during 2015 in the West Tennessee three counties. Factors that impede access of Black women to the HIV service delivery system include poverty, lack of health insurance, social stigma associated with HIV, lack of transportation, childcare burdens, and other psychosocial factors that may affect an individual's ability to access or remain in care. Engaging women in care when they are struggling to meet the basic necessities of life, while raising children, is a significant challenge.

D5. Hispanics

In 2015, Hispanics accounted for 2% (n=176) of all PLWHA in the Memphis TGA **(Table B-1)**. While this is a relatively small number, the rate of newly diagnosed HIV cases among Hispanics in Memphis TGA was increasing trend from 14.7 (per 100,000 persons) in 2013 to 19.1 (per 100,000 persons) in 2015, while the rate of newly diagnosed HIV cases decreasing. The new HIV case rate among the Hispanic/Latinos was almost four times higher than that of Non-Hispanic Whites **(Figure D-7)**. Additionally, HIV testing data from publicly funded test sites reports that Hispanics are underrepresented among those receiving testing. Of the 23,075 tests conducted at the Shelby County Health Department during 2015, 270 (2.2%) were administered among the Hispanic population, although Hispanics represent approximately 5% of the Memphis TGA population.

Figure D-8: Rates of Newly diagnosed HIV by Race/Ethnicity, in the Memphis TGA, 2011 – 2015



Data Source: Enhanced HIV/AIDS Reporting System (eHARS), TN; MS, AR.

D6. Hepatitis Infection

The CDC reports that one-quarter of HIV-infected persons are also infected with Hepatitis C (HCV) and an estimated 50% to 90% of persons infected with HIV through injection drug use (IDU) are also infected with HCV. HCV co-infection increases the risk of severe side effects from HIV medications, and co-infection can accelerate the rate at which HCV-related liver disease progression and non–AIDS cause of death in HIV infected individuals[9].

In Tennessee, positive labs indicative of Hepatitis A, B, and C are reportable to the health department for further classification into acute or chronic disease. There were 62 acute Hepatitis A, B, and E cases, but no acute Hepatitis C cases reported in the West Tennessee three counties in 2015 (NEDSS). HIV/Hepatitis co-morbidity does not seem to be a major problem for newly diagnosed HIV disease clients in the Memphis TGA recently, but it remains an important risk factor for previously diagnosed patients and may re-emerge as a significant transmission risk factor in the future.

The Memphis TGA prevalence data indicates that 5% (n=343) PLWHA report injection drug use (IDU) or men who have sex with men and inject drugs (MSM/IDU) as a risk exposure category (**Table B-2**); however, there was 3.2% (n=10) newly diagnosed HIV disease case in 2015 attributed to IDU or MSM/IDU.

D7. Homelessness

Stable housing is essential for successful treatment of HIV/AIDS[10]. A research finding by the Centers for Disease Control and Prevention (CDC) shows that housing status is a stronger predictor of HIV health outcomes than individual characteristics such as gender, race, age, drug and alcohol use, mental health

issues and receipt of social services[11]. The high prevalence of homelessness and persons experiencing unstable housing conditions significantly increases the cost and complexity of HIV care. This study have also reported that homeless and unstably housed PLWHA who improved their housing status reduced risk –behaviors by half, while those whose housing status worsened were four times as likely to increase risks through activities such as sex exchange[12].

In January 2014, The National Alliance to End Homelessness reported that from 2012 to 2014, overall homelessness in Memphis-Shelby County decreased by 21% and chronic homelessness among individuals decreased by 39%[13]. The National Alliance to End Homelessness also estimates that every year approximately 3.4% of homeless individuals are infected with HIV disease in U.S; However, in Memphis TGA, 6% (264) of Ryan White clients were documented to be non-permanently housed in 2015 (CAREWare, TN).